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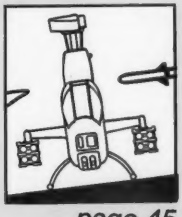

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In this 25th Anniversary issue, the *Aviation Digest* proudly features Army aviation's role in Constant Enforcer '79 conducted last September in Europe. The article, by Lieutenant General Sidney B. Berry, V Corps commander, and Lieutenant Colonel Lynn C. Hooper, V Corps assistant operations officer, starts on page 1. The V Corps cover art is by Fred Martin.

The *Aviation Digest* also has a special gift for its readers on its Silver Anniversary. For more on this see the editorial note with the article beginning on page 6.

Richard K. Tierney
Editor

The mission of the ***U.S. Army Aviation Digest (USPS 415-350)*** is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

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Articles, photos and items of interest on Army aviation are invited Direct communication is authorized to: Editor, ***U.S. Army Aviation Digest,*** P.O. Drawer P, Fort Rucker, AL 36362.

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LTG Sidney B. Berry
Commander V Corps

LTC Lynn C. Hooper
V Corps Assistant Aviation Officer

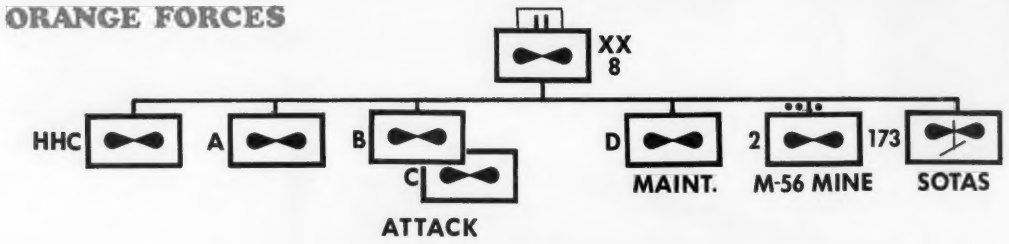
Army Aviation Activities during CONSTANT ENFORCER '79

EXERCISE Constant Enforcer '79 was a CENTAG directed and controlled field training exercise conducted in the State of Hessen in Central Germany from 12 to 19 September 1979. The exercise was conducted with Blue Forces opposing Orange Forces.

The aviation assets for Blue Forces included the 3D Armored Division's 503rd Combat Aviation Battalion with a UH-1 Huey platoon equipped with M-56 (aerial delivered mines) attached, Air Troop and Support Troop Air organic to the 11th ACR; and the 11th Aviation Battalion with the 295th Medium Lift Helicopter Company attached, under corps control.

The aviation assets supporting the Orange Force included the 8th Infantry Division's 8th Combat Aviation Battalion with a UH-1 platoon equipped with M-56 (aerial delivered mines) attached, and dedicated CH-47 Chinook support on a daily basis.

The 444th Tactical Helicopter Squadron with 11 OH-58 Kiowa aircraft remained organic to its



parent unit, the 4th Canadian Mech Brigade Group. During the course of the exercise the 4th CMBG was a member of the Orange Forces and the Blue Forces. The 444th provided reconnaissance, command and control and facilitated attack helicopter operations in the 4th CMBG sector.

Aerial medical evacuation was provided to all exercise participants by the 63rd Medical Detachment, 421st Medical Company (Air Ambulance). Dustoff aircraft flew 159 hours during the exercise with 66 hours being flown on 55 actual evacuation missions for 50 patients.

The 59th ATC Battalion fielded elements from each of its three organic companies. Elements included a flight operation center, two flight coordination centers, one instrumented airfield with approach control, two tactical instrumented airfields, three tactical VFR control tower facilities, and an air traffic control liaison team to the V Corps Airspace Management Element. The 59th ATC Battalion planned, developed and flight checked tactical IFR airway systems which were in accordance with criteria in FM 1-5, "Instrument Flying and Navigation for Army Aviators."

The tactical IFR system spanned the entire exercise area and served Blue, Orange and neutral aircraft. Army/Air Force airspace control interface was effected by having the 59th's FOC operate from the Air Force control and reporting post. There were 9,801 aircraft movements handled by 59th ATC facilities during the exercise, with 182 being tactical IFR.

Each force had two EH-1H Stand Off Target Acquisition Systems attached for the entire exercise. In addition to the combat intelligence provided by SOTAS the system was used to vector aircraft conducting air assault and to alert attack helicopters to suspected enemy armor concentrations.

Attack helicopters were extensively employed during both offensive and defensive phases of the exercise. Cross attachment of attack helicopter units was planned and executed by the Blue Forces at corps direction. Attack helicopter elements were considered as air maneuver units and their employment was monitored by corps and division G-3s in the same manner as ground maneuver units. This procedure provided the necessary information for the corps and division G-3s to provide a significant combat multiplier to the respective commander to influence the battle at a critical time. Procedures and training with A-10 Thunderbolts and AH-1 Cobras for Joint Air Attack Team Tactics were conducted during the exercise. Interoperability with German/Canadian/U.S. helicopters was practiced and refined continuously during the exercise.

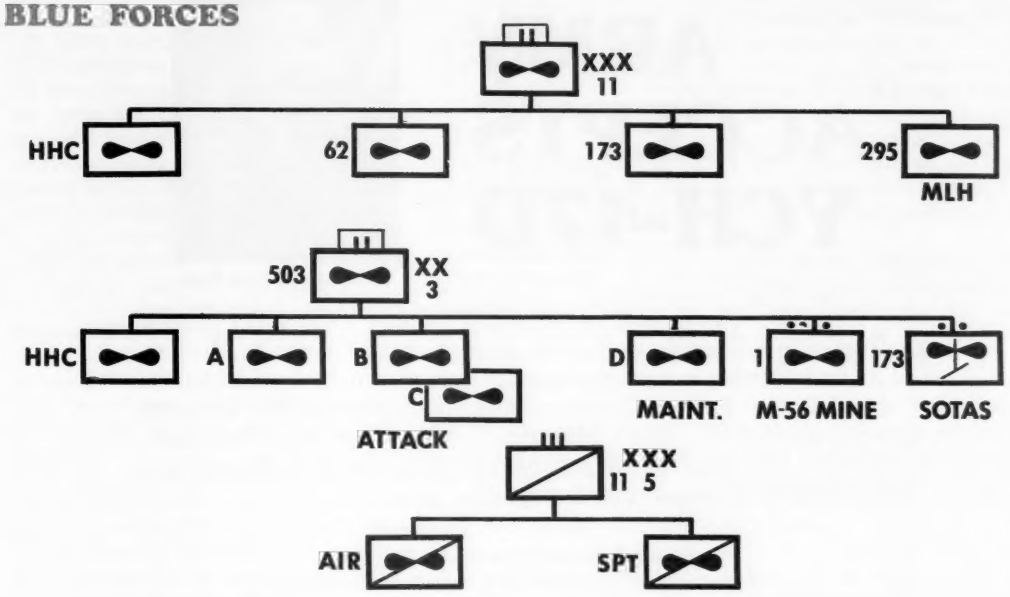
Continuous medium lift helicopter operations were conducted by the 295th Medium Lift Helicopter Company. Significant CH-47 Chinook operations were logistical resupply, engineer bridging support, air assaults, resupply of M-56 munition, and aircraft recovery and evacuation. Medium lift helicopters flew 383 hours, transported 716 tons of cargo and 944 passengers.

All units having UH-1 aircraft conducted air assault operations, logistic resupply, and command and control missions. Both divisions and the ACR had attached UH-1 platoons equipped with the M-56 aerial delivery mine system. This provided the commander a dedicated and responsive capability to rapidly emplace mine field barriers in terrain where ground employment could not be accomplished in a timely manner.

The favorable weather permitted more Army aviation and Air Force support of ground maneuver units

GLOSSARY

ACR	armored cavalry regiment
ARCSA	Aviation Requirements for the Combat Structure of the Army
ATC	air traffic control
CENTAG	Central Army Group
CMBG	Canadian Mech Brigade Group
FM	field manual
FOC	flight operation center
IFR	instrument flight rules
IR	infrared
LO	liaison officer
SLAR	side looking airborne radar
SOTAS	Stand Off Target Acquisition System
VFR	visual flight rules



than has been possible during previous exercises. Flying operations included 214 Air Force reconnaissance missions and 949 tactical air sorties. Five C-130 Hercules missions were flown using the Container Delivery System and the Adverse Weather Aerial Delivery System. Army aircraft flew 30 OV-1/RV-1 Mohawk sorties to include 19 SLAR/Photo/IR and 11 Quick Look missions; RU-21 aircraft flew 24 Guard Rail missions. A total of 1,670 AH-1 hours, 3,080 OH-58 hours and 2,091 UH-1 hours were flown during the exercise.

A significant factor in the overall success for Army aviation is the fact that with more than 400 Army aircraft participating in the exercise with V Corps units flying in excess of 7,400 hours, there were no major aircraft accidents.

The command interest and involvement at all levels and the professional execution of realistic tactical flying by each Army aviator was indeed commendable. It must be emphasized that low level, contour and nap-of-the-earth flight (to include under wire operations) were constantly practiced and even administrative aircraft were restricted to a maximum altitude of 150 feet over most of the exercise area.

Significant lessons learned are as follows:

- Attack helicopter units are a highly responsive and lethal combat multiplier which when lost in battle will not be rapidly and continuously replaced. It is imperative that corps and division commanders closely monitor the employment of attack helicopter assets and their battlefield attrition.
- Planning requirements for air maneuver units may be easily miscalculated. The ability to rapidly employ attack helicopters, conduct air assault, and transport high priority ammunition and supplies cannot be matched by ground means. However, the planning phase cannot be condensed and on most occasions more time is required to conduct coordination and liaison with multiple units. The early use of LOs when "warning" and "be-prepared" orders are issued by higher headquarters can eliminate many serious problems that arise due to a lack of knowledge regarding capabilities and limitation of Army aircraft.
- The ARCSA III study validated the requirement for an attack helicopter battalion under corps control. The urgent requirement for this combat multiplier cannot be overstated. When it becomes necessary to weight or thicken the battle area in a corps sector by cross attaching attack assets, commanders who must release an attack helicopter unit realize a significant reduction in their ability to rapidly influence the battle in a specific sector. The responsiveness and flexibility afforded by the proper employment of attack helicopter units is essential to the combat commander at all levels, and must be provided to the corps commander as early as possible.

ARMY ACCEPTS YCH-47D

Lieutenant General Baer

Last December the U.S. Army accepted the first YCH-47D Chinook helicopter, in ceremonies at the U.S. Army Aviation Center, Ft. Rucker, AL. The following is an adaptation of remarks made by Lieutenant General Robert J. Baer, Deputy Commanding General for Materiel Development, U.S. Army Materiel Development and Readiness Command. For more on the acceptance ceremony at Ft. Rucker see "Reporting Final" beginning on page 35.

Lieutenant General Robert J. Baer
Deputy Commanding General for Materiel Development
U.S. Army Materiel Development and Readiness Command

IT WAS ABOUT 10 years ago that the Army—faced with an affordability issue in the development and procurement of a new heavy lift helicopter capability to carry us through the 1990s and into the 21st century—made the decision to meet these requirements by modernizing an existing resource, the CH-47 Chinook helicopter.

At that time we knew the C model Chinook met the lower bands of performance required for a new medium lift helicopter. But at the same time we recognized the shortcomings to overcome if we were to have the means of providing rapid resupply and logistical support for our combat forces. Our effectiveness in engaging and our success in countering and overcoming the enemy is ultimately dependent upon our ability to resupply the necessary ammunition, weapons, missiles and fuel to a highly mobile fighting force, and do it in a timely manner.

Hence, our modernization program for the Chinook has focused on those areas that had the greatest improvement potential for reliability, availability, maintainability and productivity, while giving at least equal attention to safety and cost reduction. We expect increases in operational readiness and decreases in operating and support costs.

Acceptance of this aircraft today marks a major milestone in this program as we transition from contractor development testing to the Army's developer and user testing. This testing will determine how well this modernized aircraft system meets the Army's requirements, how well it measures up to the stringent goals we established years ago.

It is my pleasure to accept this aircraft—the first YCH-47D for the U.S. Army—and to pass the keys to Major General John Koehler, Commander, U.S. Army Test and Evaluation Command, for the initiation of comprehensive development testing.

I am certain that the Test and Evaluation Command, the Aviation Development Test Activity and the Operational Test and Evaluation Agency will expeditiously confirm the suitability of this fine aircraft for its important operational mission in our force structure, and we will soon have its tremendous capability employed in the field Army.

Editor's note: For more on the CH-47D see the September 1979 issue of the ***Aviation Digest*** for articles by:

- Mr. Joseph P. Cribbins, Special Assistant to the DCSLOG and Chief, Aviation Logistics Office, HQDA.
- Colonel James H. Hesson, CH-47 Modernization Project Manager, U.S. Army Materiel Development and Readiness Command, St. Louis, MO.
- Colonel Charles J. Oram, Director of Combat Developments, U.S. Army Transportation School, Ft. Eustis, VA.

The ***Aviation Digest*** has a limited number of September 1979 issues which are available upon request. Write Editor, ***Aviation Digest***, P.O. Drawer P, Ft. Rucker, AL 36362 or call AUTOVON 558-6680 or Commercial 205 255-6680.

Rescue In Japan

SP5 Kathy Wright
Public Affairs Office
U.S. Army, Japan

THE TRAGIC STORY began when scores of young U.S. Marines became trapped in Quonset huts during a raging storm that hit Japan late last year. A stove ignited a deadly stream of gasoline and engulfed the metal shelters in a blazing inferno. Before any warning could be sounded, lives were lost and many were injured as the flames gutted the structures.

However, several of the fire's victims were rescued from greater harm or even death due to the spontaneous actions of the personnel from the United States Army Aviation Detachment, Japan and the United States Army Health Clinic, Honshu.

"It was a total team effort," pointed out Major Lewis F. Gold, a pediatrician at the U.S. Army Health Clinic, Honshu. "Without even one of the individuals who participated, the task of caring for the injured would have been impossible or at best, hampered."

The "task" turned into a feverish night and day operation as both the medical and aviation units worked during the crucial first 24 hours following the disaster.

"I was leaving the clinic that day because the threat of the storm had diminished in the Camp Zama area," recounted Major Gold. "But I mentioned to the others that if anything came up to just call me. I was home only 10 minutes when the phone rang."

About the same time, the aviation unit at Camp Zama was hurriedly preparing to fly helicopters to transport much needed medical supplies and to medevac the most seriously injured. "We had three helicopters involved in the over-all operation," explained Major Earl W. Dennis Jr., operations officer of the U.S. Army Aviation Detachment. "But the biggest obstacle we had that evening was getting to the Marine base itself. Since the remnants of the storm were still hovering over the area, we had to combat winds gusting up to 45 miles per hour."

While the aviators were getting ready, a caravan of ambulances and medical teams from Camp Zama and Atsugi Naval Air Facility were already headed towards the accident site.

"We were the first medical group there," recalled Major Gold. "Our first step was to establish who, where and how bad the victims were injured. By this time, the Yokota Air Base rescue squad was on the scene. Fortunately they were equipped to administer aid to 200 people and also to provide a couple of surgeons."

The next move was to put the most critical patients on the aircraft which would transport them to several U.S. military and Japanese medical facilities. "We logged in approximately 40 flight hours during the awesome ordeal. But with the response and cooperation from everyone who had arrived, I know we saved several lives that night," reported Major Dennis. "Although we supplied air support, the Navy crew and their helicopter also played a very important part in the mission."

While some of the less seriously hurt Marines were being treated at the Camp Fuji medical facility, it was decided that all would be transferred as soon as possible.

"The Marine troops helped set up lights and worked diligently to construct a makeshift landing site nearby," elaborated Major Gold. "Our next goal was to arrange to send a number of the young victims back home to the States via the fastest method possible. They would then be able to receive more specialized burn treatment and have a chance to be with their families. Unfortunately, it was the last trip for some of them."

Both the Army Aviation Detachment and the Army Health Clinic recently received well-deserved recognition for their outstanding services rendered during the tragedy when they were awarded Certificates of Achievement.

"It was just part of our job," modestly reasoned Major Dennis. "Words can't express the remorse we all felt during the terrible accident. I pray it's a job we never have to do again."

Well Done!—Brigadier General Joseph H. Kastner (right), Chief of Staff, United States Army Japan, presents Lieutenant Colonel Lesly F. Ware Jr., Commander, U.S. Army Aviation Detachment, Japan, with a Certificate of Achievement at Rankin Airfield, Camp Zama. (U.S. Army Photo By SP5 Scott Holt)

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February 1972
Aviation Digest

McNair versus the

Lieutenant Colonel Carl H. McNair Jr.

Twenty years appears to be an adequate period for the statute of limitations to expire on a young lieutenant's errors in flight planning and procedures; therefore, the following article is reprinted for all to read and enjoy, but most of all, that some might learn and profit from my mistakes and experience. Except for the time and place, its principal character, me, could well be a current student here at the Army Aviation Center, who, like me, might elect to take a shortcut on a preflight or to not precisely follow his checklist—on a cold and windy January Alabama morn.

More than 3,000 hours have been added to my log since this incident in January 1960, and I am proud to say all have been accident free. Thanks to good maintenance, good crews, good training, even a little luck, and perhaps, in some small way, to that lesson I learned as a young lieutenant from "that darn bull."

Brigadier General Carl H. McNair Jr.

IT WAS ON A COLD and windy January Texas morning when I learned my most important lesson about flying—that almost all accidents start on the ground before the flight even begins. I was a young and eager Army aviator with nearly 1,500 hours and 5 years of flying experience in fixed wing aircraft from small L-4 Cubs up to C-47s. My flights had ranged from small sod fields in the remote areas of Taiwan to long overwater international flights into places such as Tokyo, Hong Kong and Manila.

Having mastered the art of instrument flying a few years earlier, I had a considerable amount of actual weather flying, and the Jeppesen, International Civil Aviation Organization and Federal Aviation Administration procedures were all equally familiar. Carburetor ice, engine failure, lost radios and a blown tire had all come my way at one time or another. I felt that I had pretty well learned about flying—but then I met the helicopter, and that bull.

When I received orders to attend helicopter transition training I was pleased to expand my aviation horizons into the then rapidly growing Army mobility program. Qualification training was conducted at an Army installation called Camp (now Fort) Wolters in north central Texas where the winter winds can really blow.

It was my fortune to return from overseas in midwinter to attend the 8-week qualification enroute to my next assignment. While it is cold in north Texas when the temperature plummets below freezing and the northers begin to blow, the weather becomes doubly chilling when preflighting with a flashlight at 0630 while helicopters parked all around are churning up gale winds during starting, warmup and runup. Thus opens the curtain on the day of my life when I really learned what flying was all about.

After about a week of dual instruction I had managed to solo the OH-23D observation trainer without too much difficulty. In fact, I may have been a little too confident for a helicopter fledgling who had just learned that the helicopter, unlike the fixed wing aircraft, had two control sticks instead of just one. These had come to be called by the students simply the *go* stick and the *whoa* stick.

Editor's note: The *Aviation Digest* periodically will be reprinting functional articles it has carried in its first 25 years. The significance of the article—then and now—will be pointed out in an introduction by the author or by an appropriate person or agency. Let us know if there are any particular *Aviation Digest* articles you would like to see reprinted

Bull

Each instructor in the school had three students and in order to maximize training was allotted two helicopters for each session. In this way he could have one student flying solo in one helicopter, one student undergoing dual instruction and the third student preparing for flight. After a period of 90 minutes the three students would change aircraft and position.

On perhaps the coldest day of the entire training period I was the solo student and hence had the responsibility of preflighting and preparing the solo ship for flight. The thoughts which raced through my mind as I walked across the broad parking apron in the predawn chill all focused on one thing: warmth. How could I get the ship warmed up and the heater going?

During fixed wing flight training I had learned the importance of a proper and thorough preflight inspection. Stories of bird nests, misplaced screws and even screwdrivers all had made indelible impressions. I was a "by-the-book" student, almost to the point of frustrating my instructor and fellow students. Unfortunately, in the intervening years I had been blessed with some very conscientious and most capable crew chiefs who preceded my daily inspections with equally meticulous inspections of their own. It was then almost inevitable that sooner or later my inspections might becomes less stringent and—occasionally—without benefit of an inspection checklist. Because of the large number of helicopters departing simultaneously during training, there were no crew chiefs with each aircraft and the pilot was on his own. Hence, the cold and complacency awaited only the third "C" —carelessness—to give me a headache I have never forgotten.

As I reached the ship I took the checklist from my pocket and began the inspection in earnest, moving rapidly from one item to the next. When I checked the motorcycle grip of the throttle control it would not turn. This was totally unsatisfactory, so I went to notify a nearby mechanic of my plight. When he forced the throttle one could see where moisture condensation had frozen in the cable linkage. With the problem diagnosed it was a simple matter to chip away a small ice deposit, warm up the linkage and the throttle then turned freely.

Although the immediate malfunction was solved, I was now about 10 minutes behind the other aircraft in the inspection, warmup and hoverout procedure. Not only was I getting colder due to the whirl of rotor blades all around me, but I was losing valuable training time. Still alert, however, to my inspection requirements I was somewhat overconfident with myself because I had just found one deficiency and corrected it. I hesitatingly tucked the checklist in my pocket and walked around the aircraft, completing a more cursory inspection than my conscience told me I should.

In a brief moment or two the "walk-around" was over and I was comfortably in the helicopter with doors closed, rotor turning and at long last heat. Warm air flowed throughout the bubble and I settled back for a "by-the-book" runup, complete with the wrinkled checklist.

All was well, everything in the green and I called for hover clearance to the takeoff pad. The ship handled beautifully in the hover, no vibrations and good control response. Best of all the heater and defroster were doing a marvelous job in spite of the -10 degrees C. showing vividly on the free air temperature gauge. I was satisfied that in spite of my earlier tribulation I was well on my way to enjoying a pleasant training flight. Little did I know that only seconds away a chain reaction was about to begin which would leave my airman's pride bruised and battered with my face as crimson as the helicopter I was flying.

As the voice from the tower droned, "Number one pad, clear for takeoff," I pulled in collective pitch, rolled on throttle and began to accelerate onward and upward. A quick cross-check of the panel showed everything in order—all gauges in the green, engine and rotor tachometer needles joined, altimeter rising . . . but wait, the air speed is still zero. That's impossible because I'm flying through the air gaining altitude and air speed every second. A slight nudge on the instrument and still the needle is glued on zero knots. By process of elimination a more comprehensive examination of the situation includes glancing down through the bottom edge of the bubble. There blowing in the breeze was 12 inches of bright red cloth prominently stenciled in white: REMOVE BEFORE FLIGHT. The pitot cover, still tightly affixed to the pitot tube, had been forgotten in my haste. All manner of thought raced through my head as to how I could have overlooked such an obvious item. Jamming the checklist in my pocket before completing the preflight inspection was now a vivid memory. While I had been most concerned about the cold a few minutes before, I was now growing warmly uncomfortable as I began to ponder my situation.

As anyone knows who has flown an aircraft, fixed or rotary wing, with an inoperative air speed indicator, this really isn't too serious a problem—if the weather is good, if all other instruments are working properly and if you have a good idea as to what power settings and pitch attitudes will result in what air speeds.

Unfortunately, very little of my pitch and power fixed wing experience was applicable to the helicopter. If I had learned anything in my grand total of 15 hours of helicopter flying it was that you needed an air speed indicator on landing approaches. More importantly, if you were among the real unfortunate to experience an engine failure, an air speed indicator is essential to maintain an adequate lifting speed for autorotation.

Lastly, I guess I was more concerned about landing at the stagefield in the midst of some 44 fellow students, 15 instructors and an "all-seeing" flight commander operating the control tower. For, even if they were half-blind and looking the other way, they couldn't miss seeing the long red warning flag trailing violently in the 60-knot breeze beneath my helicopter. Without any reservation or trepidation I would automatically get a failing grade for the day, a *pink slip* as it was politely called. The embarrassment associated with such an amateurish blunder would probably surpass the academic impact however.

After pondering all these things I elected to do the only honorable thing and land at some intermediate point, unobserved and remove the pitot cover. Throughout the countryside there were small clearings designated for practicing confined area approaches. These areas were on private timberland or pasture but were leased by the government for student training. I spotted one of these clearings along my route and made a high reconnaissance. It appeared satisfactory except that there were cattle grazing in an adjacent clearing only a scant 100 yards away.

Feeling that I had an adequate margin of safety I descended steeply over the trees. With the helicopter sitting on a level piece of ground I

locked the controls and jumped out to remove the forgotten cover. As I looked up from untying the warning flag, a helicopter flew noisily over the adjacent field and a few cattle began to move my way. Recognizing this as a potentially catastrophic situation should the cattle wander into the whirling rotor blades of my helicopter, my visions were of a bankrupt lieutenant paying for damages to both helicopter and cattle.

I moved quickly to meet the situation and approached the lead cow with my bright blue flight cap in hand, waving it violently to turn the herd away from the helicopter. It worked, the lead cow turned on me and gave chase. Only then did it dawn on me that this was not in fact a cow, but a large and blusterly *bull.*

Moving with the agility of a track star, I made it to the nearest tree and shinnied up. The bull pawed the ground anxiously as the remainder of the herd milled around closer and closer to the spinning blades still turning under idle power. It could only be a matter of time until one of them would hit a blade and the entire helicopter would tear itself into a million pieces.

When the bull was momentarily distracted I cautiously slid down the tree and lunged to an adjacent tree, thence to another tree always keeping stout timber between us to thwart the bull's obvious intent. Finally, I had half circled the entire clearing and was within 10 yards of the helicopter.

As the bull was once again distracted I leaped madly for the plexiglass door, flung it open and unlocked the controls as I slid into the seat. Almost before my feet had touched the pedals I was pulling in pitch and rolling on throttle. The helicopter rose vertically but not gracefully from the clearing. As the bull charged under my skids he surprisingly encountered only empty air. The ugly whirring orange irritant was now moving up and out of his reach.

COMMENTS:
Violation of standing safety procedures; i.e. executing a solo autorotation at beginning of training week without first demonstrating sustained proficiency to the instructor.
Lt Carl McNair Jr
STUDENT'S SIGNATURE
W. N. Sims
I.P. SIGNATURE

With a deep sigh of relief I leaned back in the seat but my heartbeat still sounded like a triphammer when I realized that in my haste I had not fastened my safety belt. The frequency of the hammer quickened.

In the normal conduct of flight in a helicopter, both hands and both feet are used to control and fly the machine. Only for brief intervals can one hand be taken from the collective pitch to tune a radio or adjust an instrument, but under no circumstances can one *ever* take both hands from the controls without cataclysmic results.

I now found myself relieved from the pitot cover problem and the subsequent encounter with the bull only to face another dilemma: How could I fasten my safety belt before landing at the stagefield? To chance an arrival in full view of my instructor with my safety belt flapping outside the door would surely result in a *pink slip*. This humiliation also could lead to the exposure of my two earlier goofs if an explanation were demanded as to why I was flying around without a safety belt firmly affixed around my posterior.

Collecting my thoughts I decided to land again and correct the discrepancy. This time I carefully selected an unused farm road without an animal of any description, be it male or female, in sight. I skillfully maneuvered the ship onto a wide place in the road where the skids fit neatly outside the ruts.

Everything seemed under control, so I elected to take advantage of the situation and recoup my badly shaken composure with a much needed cigarette break. I locked down the controls, walked about 50 feet away and spent the break time going over in my mind just what had gone wrong on this flight. Not only had my early oversight led me into a face to face encounter with a stern bull without a matador in sight, but my hasty departure without a fastened seat belt could have smeared me all over a wide swath of pine trees. I chalked it all up to experience, confident that I had had three strikes for the day, was not out and, equally important to the morals of a trainee, had not gotten a *pink slip* for the day.

More confident that ever in my capabilities, judgment and skill, I took off and flew the few remaining miles to the stagefield. Buoyed up by my earlier evasions and anxious to give the "business as usual" impression to those on the field who were watching, I turned on the base leg calling for a touchdown autorotation. This poweroff emergency procedure disengages the engine and allows the helicopter to descend with lift generated by the freewheeling rotor blades. While an approved training maneuver, it is somewhat more risky than an ordinary landing and consequently had some restrictions attached to it which were

momentarily dimmed by my complacency and overconfidence.

The autorotation itself was well done for a 15-hour student if I must say so myself. Yet, as I hovered to the parking area, I sensed that something wasn't right by the gait of the instructor as he walked to my parking spot. The look in his eye was more determined than that of the bull, and as the engine noise was dying away he didn't have to speak. On his clipboard he was inserting a very pink grade slip and beginning to write.

All manner of thoughts raced through my mind as I busied myself in the procedure of securing the electrical switches, radios and controls. Was it the pitot cover on takeoff? Was his dual instruction helicopter the one that flew over the cattle in the next field and then saw me up in the tree? No one had seen me land on the road, or had they?

As I stepped from the helicopter my questions were immediately answered in language more representative of nautical personnel than aeronautical, but nonetheless effective in getting a message across. In brief it was Monday, an important fact which I overlooked mentioning earlier, but a very important fact for a student. We were expressly forbidden from performing autorotations after two nonflying days until we had first done a dual autorotation with the instructor on Monday.

As I read further down the pink grade slip not a word about the pitot cover, the bull or the road—just the simple statement: "Violation of standing safety procedures; i.e., executing a solo autorotation at beginning of training week without first demonstrating sustained proficiency to the instructor."

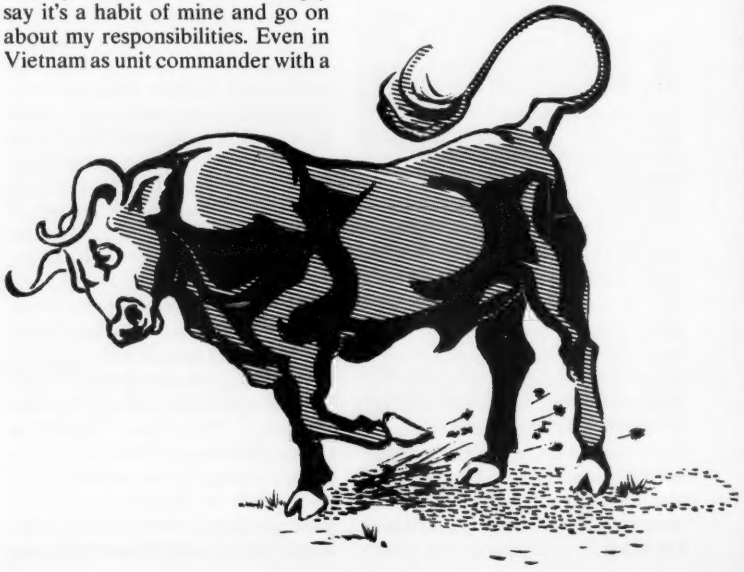
As my fellow students gathered around me inquiring, "What did he get your for?" my face was as pink as the slip. I wanted to tell how it took four strikes to get me out that day, but I knew deep down that I had struck out myself before I ever pressed the starter.

In a rationalizing way I tried to convince myself that I had skillfully overcome three problems which could have become more serious as well as very damaging to my professional pride in the presence of my fellow students. Thus, the bee came back to sting for that first mistake—not following the prescribed preflight inspection checklist. In no way could I rationalize away that responsibility and the possible consequences. A few weeks later I completed the transition training, not only as a qualified helicopter pilot but also as a more mature, more demanding, more conservative and consequently safer aviator.

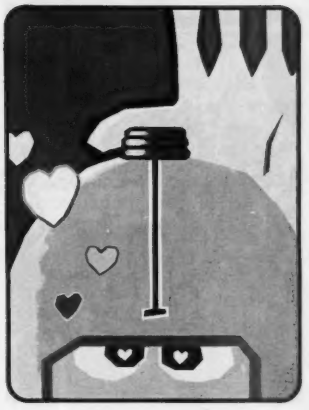
Ten years have now passed and I suppose if there is a statute of limitations on flying mistakes I hope I have passed it. But to this day I have never lost my appreciation for the lesson I learned from that chain of events which were triggered by a simple ground oversight before the flight began.

Today, as I conscientiously inspect the aircraft before I fly, other pilots sometimes ask why I bother when the crew chief or copilot has already made the checks. I simply say it's a habit of mine and go on about my responsibilities. Even in Vietnam as unit commander with a very busy schedule and a full crew of gunner, crew chief and copilot at my disposal, I always took the time to check the vital parts. It's surprising how often you will find an oil cap not secured or a forgotten safety wire. Strange as it may seem, I even landed once at a major installation in a transient status and the main fuel tank was serviced with 50 weight oil. Had this not been discovered in draining the fuel pump I hesitate to think about the consequences when switching to the main tank.

Twenty-five hundred more hours have been added to my log since I learned that memorable flying lesson in Texas, yet the moral of that episode lingers with me. While the story itself is replete with personal embarrassment, I have told it frequently to other aviators—especially the young—hoping that they could reap the benefit without the chagrin which befell me. It has always been good for a laugh on the Old Man, and I only hope that it has had its intended effect of being good for a life which could be lost due to a faulty inspection blunder like I once made.



VIEWS FROM READERS



Editor:

I read, with a great deal of interest, CW4 Joseph A. DeCurtis's article in the December issue supporting the need for a maintenance test pilot standardization program.

CW4 DeCurtis is correct in stating that U.S. Army Safety Center records show that several accidents have occurred during maintenance test flights.

During the period 1 January 1974 through 31 March 1979, there was a total of 426 major and minor aircraft accidents. Of this total *16, or 3.7 percent,* occurred with a maintenance test pilot on board the aircraft. Combined damage and injury costs for these accidents was $6.2 million.

I share CW4 DeCurtis' concern for reducing these losses. However, the cold hard fact is that the record also shows we have a far greater number of accidents caused by improper maintenance procedures and inspections.

During the same period, *92, or 21.6 percent,* of the 426 major and minor aircraft accidents involved maintenance errors as a direct or contributing cause. The upward trend in maintenance-error mishaps increased steadily throughout this period. Further, it is suspected that many mishaps recorded as being caused by materiel failure were, in fact, caused by maintenance error.

From an aviation safety standpoint, I feel the Army would get more bang out of the buck from a concerted effort to assure strict compliance to by-the-book maintenance and inspection procedures rather than a standardization program for maintenance test pilots.

Standardization in itself has not proven to be a cure-all for crew-error accidents. During the 5-year period from fiscal 75 through 79, Army aviators were involved in a total of 468 aircraft accidents. Crew error was a factor in 336 of these accidents. The Army's IP/SIP community has been a significant contributor to this accident record and the crew-error problem. Instructor pilots were involved in 134, or 28 percent of the total 468 accidents. In fiscal 79, IPs were at fault in 50 percent of all fixed wing accidents.

The high incidence of IP/SIP involvement in—rather than prevention of—human-error accidents *could* be looked upon as letting the fox in the hen house.

Colonel Edward E. Waldron II
U.S. Army Safety Center
Fort Rucker, AL 36362

Editor:

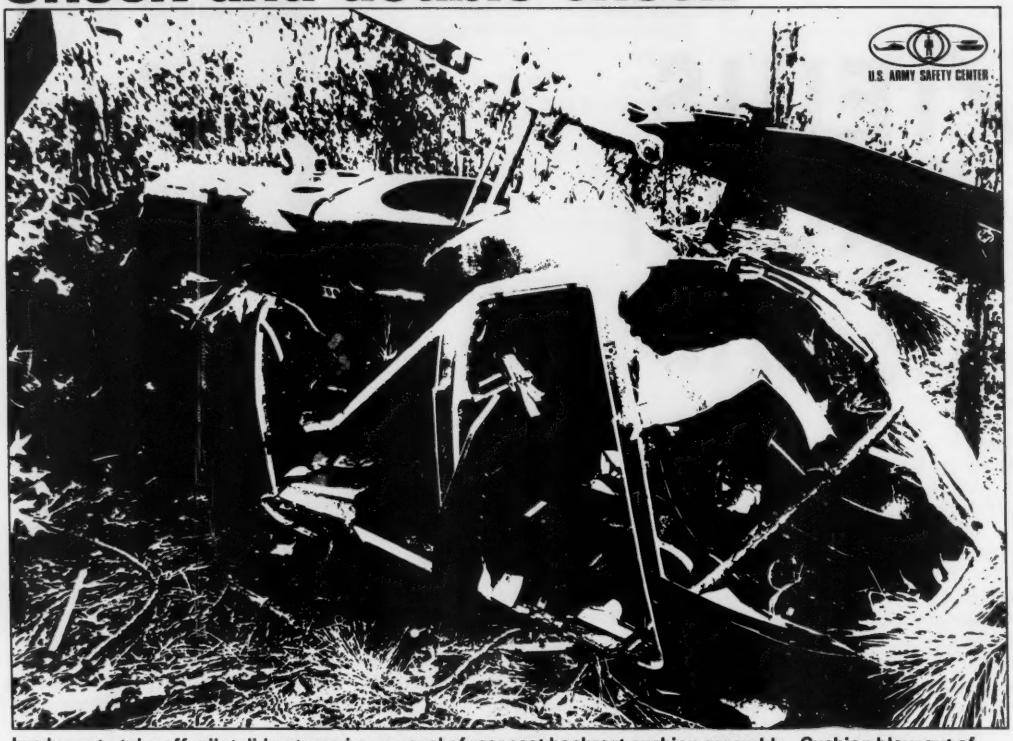
There is a point in time past which any man will exceed his physical or emotional capability of performance. It is not only of benefit to the individual to recognize this fallibility, but imperative that supervisors be able to predict and avoid passing the point of no return. Accidents do not just happen, but are created and, in most cases, by a predictable and preventable chain of events.

I believe most have heard these postulates before. If not in the same words, at least in some related context. To deny in word or deed the implications of this philosophy is to admit a gross misunderstanding of the vital part played by finite man in increasingly demanding functional roles. People must not be expected to perform as juggernauts with relentless devotion to duty and without point or purpose. Too many times human beings are observed as just numbers filling slots, labeled by certain skill identifiers, and expected to perform any and all assigned tasks based on this "numbers" rationale. An environment must be created in which work is done because there is self-satisfaction in doing so and tempered in volumn in order to prevent loss of purpose.

Let us now try to relate what's been said to human failure in the scheme of accident prevention. Past behaviorists such as Maslow and Gailbraith have indicated a definite relationship between need satisfaction and behavior. In other words, to obtain sustained, desired behavior from anyone, certain of his or her basic needs must be met. He needs a safe environment in which to work. He needs a sense of purpose and self-importance in his job. He needs to know that a good job is appreciated and that he will be rewarded, not necessarily in a material sense, but none-the-less rewarded, for a job well done. Accomplishing all of this will aid in developing pride, a feeling of contribution, and an interest in his work which leads to education and skill. An educat-

Continued on page 23

Check and double check



In a hurry to take off, pilot did not require removal of rear seat backrest cushion assembly. Cushion blew out of OH-58, which was flying with all doors removed, and hit tail rotor blades. Blades separated from tail rotor, aircraft crashed, and pilot was killed.

You are fooling nobody, including yourself, when you skip or do an inadequate job on a preflight check because of too much pressure, not enough time, fatigue, or a self-induced idea that the checklist isn't all that important in the first place. Mishap experience shows that some Army pilots obviously believe that checklists are not worth the time and patience they require in the face of some really important task which should have been finished yesterday at the very latest. Unfortunately, the checklist is one of the first things to go out the window when time and patience run short. In a depressing number of cases, when the checklist goes out the window so do the pilot and his crew, sooner or later.

Failure to make an adequate preflight or use the checklist correctly was listed as a cause factor in 484 mishaps for the period FY 77 through FY 79. Seven resulted in accidents and 42 in incidents, with 6 people killed and 10 injured. However, over different terrain and under different circumstances, these could easily have turned out to be major accidents.

More than once you have probably heard somebody say he has the checklist so thoroughly engraved on his mind he could recite it backwards and forwards. To be sure, if you stick around Army aviation for a while, you will become familiar with the checklist, maybe even thoroughly familiar. So familiar, in fact, that you can become complacent and fall into that ho-hum attitude which can do you in. And that's when you overlook a checklist item at just the wrong moment. No use suddenly remembering it after you are aloft and your turbine starts giving off not-so-funny noises.

Carelessness, or complacency (and is there any difference, really?), concerning the checklist probably stems from the fact that relatively few checks, no matter how detailed and careful, turn up anything seriously wrong. So why bother when the odds are with you? Why go to your dentist twice a year?

Complacency isn't the only item on the list of potent checklist

troublemakers. There are people who not only know everything they need to know but know it better than most. Operating on the usually sound theory that no matter how good something is it can be made better, people in the grip of this kind of self-hypnosis have been known to take pencil and shears to the prescribed checklist, performing drastic surgery. They will tell you proudly that their home-grown versions not only save time but get things done just as well.

The person who allows complacency or know-it-allness to lead him into procedures the book would never condone is asking for what he is sure to get.

Your aircraft is no better than the person who flies and maintains it and if it is being asked to perform with an oily rag lodged somewhere in its craw, something a thorough check would have turned up, it can't be blamed if it falls out of the sky.

Service personnel come blessed, or cursed, with the same lavish helping of human nature as other mortals, including pilots. They react the same way to fatigue, pressure, anxiety, extremes of discomfort, and dim-witted self-satisfaction. The best of them can and do make mistakes.

All top-flight mechanics know this. Like mature pilots they are keenly aware that their capabilities and experience have their limits and that they have to maintain a constant, all-points lookout against the creeping complacency and overconfidence which can turn them into zombies before they know what has hit them.

Checklist was not followed, and right passenger seatbelt was left outside aircraft. Seatbelt banged against fuselage during entire flight, causing $5,000 damage.

Loose nut on accumulator end of air tube assembly resulting from improper torque caused power loss. Aircraft was landed on paved road, with major damage to cross tubes. Luckily, there was a landing area available.

Like homemade preflight checklists, homemade maintenance procedures just won't do. Sticking to the book is the only answer.

Every unit commander has a responsibility to see that all personnel follow the checklist from top to bottom all the timel And the only way to do this is to do it with book in hand. It is a matter of positive thinking. No mature, normally confident person who knows his job likes to have it dinned into him night and day that he must perform in a certain way and only that way. But we are all human. And accidents do keep on happening in which failure to follow the checklist is a factor.

How often have you heard (or said yourself when you were in a hurry to get back home): "The aircraft's okay. Let's give it a quick onceover." Or have been handed a "revised" checklist with the famous last words: "Never mind what they told you at school. We do things differently out here."

Do you **always** insist on an oral call-out when you are following the checklist? When a fuel line has been taken off and put back in place, do you **always** check for leaks around the connections? If you are interrupted during a check, do you take up where you left off, giving human nature a gap wide enough to drive a truck through, or do you start all over again?

All this is a matter of individual responsibility, particularly when the unit's aircraft are operating over a wide area out in the field. The safety officer and the unit commander share the common human inability to be in more than two or three places at the same instant. A large part of the time, aircraft crews and even mechanics are on their own to a considerable extent; and, in fact, indications are that most of them are doing a good job most of the time. But what we want is **all** of the people **all** of the time.

Check and double check. ■

Decisions On Flight

CW3 Wes Bishop
Safety Officer
522nd Army Security Agency
Glenview Naval Air Station, IL

AVIATORS ARE definitely decisionmakers!

Aviation Psychology backs this up by listing a number of characteristics of aviators as decisionmakers:

- flexibility in dealing with events;
- broad understanding through experience and training;
- self-programing;
- subjective perception—the pilots' views of reality are influenced by their perceptions, their motivations, their emotions, and vulnerabilities to confusion.

In other words, pilots have some inherently good traits as decisionmakers, but they can be offset by personal involvement, emotionally affecting how they see a situation, and the possibility of confusion.

When flying, the need for good decisions is very clear—lives depend on them. The purpose in discussing decisions here is three-fold:

- Pilots need to understand two detrimental characteristics they have as decisionmakers.
- Aviators need to gain a working knowledge of techniques to compensate for their limiting characteristics by making flight decisions ahead of time—if possible on the ground.
- Aviators need to know where the trouble spots are in the particular areas they operate so they can properly prepare for them.

Aviators must be aware of their limitations. For example, subjective perception is the way we see things. It begins with what senses tell us, to include *how we interpret* this information. Poor lighting, scratched or dirty windshields, weak radios and many more limiting factors encourage misinterpretation of what really surrounds us. Then we face a problem with the varying degrees of accuracy of *how we remember* this information. Also we should be aware of *how we attach different values* to each piece of information and every possible alternative. We don't just decide, "Is it safe?" or "Is it efficient?" but also, "Is it fun?" and, "What will the others think of me?"

Sometimes we even add confusion to the whole situation. We may get overloaded by cockpit chores and misread a chart or instrument, or misunderstand a radio call.

Aviators also can become confused in their values, choosing to fly home in adverse weather rather than remain overnight, or carry just one more person—thus impressing the commander, or maybe the copilot. Or perhaps they can't suppress the desire to fly a bit of low level just for fun. Nearly everyone has seen the results of these acts in FLIGHTFAX accident summaries.

We know that if we make decisions while we are emotionally involved or while we are distracted, it won't be as good as if we had had the situation under control. Also, aviators never have as much control over flight decisions as they do on the ground during preflight planning. Consider some advantages of making decisions on the ground:

- Availability of resources.
- Fewer distractions; less stress.
- Reduced cockpit chores.
- No loss of face if you decide "no go" on the ground.
- You are at your freshest.
- Making the decision is top priority on the ground, flying the aircraft is top priority in the air.
- Time is available to consider and research alternatives.
- Surprises can be avoided (no gas or beacon out at your destination, etc.).
- Options can be chosen before the critical point has been reached.

These are some good reasons for planning the entire flight on the ground.

Now, let's take a look at a likely trouble area that's difficult to handle—Murphy's Law. Here's a situation. You've done everything the book requires. You have completed DD Form 175. You had a weather briefing. You have the aircraft looking good and the weight and balance worked out OK. Now ask yourself, "What could go wrong?" Remember Murphy's Law—If it can go wrong, it will, and at the worst possible time and place. Your best defense is to expect the unexpected.

The Federal Aviation Administration (FAA) has drawn the conclusion that often the cause of an accident is not a bad decision, but failure to recognize a decision was necessary:

- The pilot did not know a certain course of action was possible, legal or expected.
- The pilot failed to recognize a decision point.
- The pilot was confused by irrelevant factors—pushed by "get-home-itis."
- The pilot was not qualified to make the decision at hand—being new to the aircraft and local weather.

The two limiting decisionmaking characteristics a pilot has—subjective perception and vulnerability to confusion—have been discussed. But judgment is a difficult thing to teach. It depends on what kind of person the aviator is. The FAA has two suggestions to become safer pilots:

- make decisions beforehand; and,
- check your own decision by asking, "Would I recommend this course of action for someone else?"

Remember, as an Army aviator you are a decisionmaker. And the best decisionmakers plan ahead and expect the unexpected.

Proper Seatbelt Installation For The OH-58

Figures 1 and 2 are corrected views of the illustrations which appeared in "Reporting Final," page 25, November 1979 *Aviation Digest.*

Proper Seatbelt Installation for the OH-58. During Aviation Flight Standardization Evaluation/ Assistance Visits, Directorate of Evaluation/ Standardization OH-58 Kiowa standardization instructor pilots (SIPs) have noted widespread discrepancies in the installation of the pilot's and copilot's seatbelts on aircraft with MWO 55-1520-228 30-19 completed. TM 55-1520-228-23, page 2-20A, paragraph 2-93b and figure 2-7a, page 2-20c, outlines the proper installation of the pilot's and copilot's seatbelts.

Figure 1 (below) shows the proper and improper seatbelt installations. The pilot's and copilot's seatbelts are designed to be installed in this manner to ensure crashworthiness. If properly installed, the force exerted by the seatbelt in the crash sequence is directed to the hinge, while, if improperly installed, the force exerted by the seatbelt is across the hinge, which can cause the hinge to be overstressed and subsequently fail (see figure 2). This deficiency can be detected easily during the preflight and corrected on the spot. By correcting improperly installed pilot's and copilot's seatbelts, crash survivability can be greatly enhanced. **(DES)**

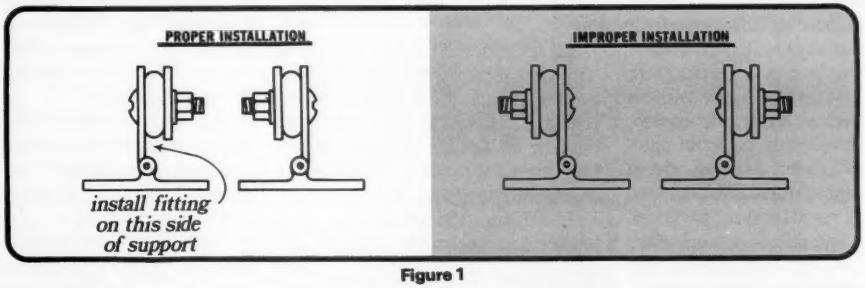


Figure 1

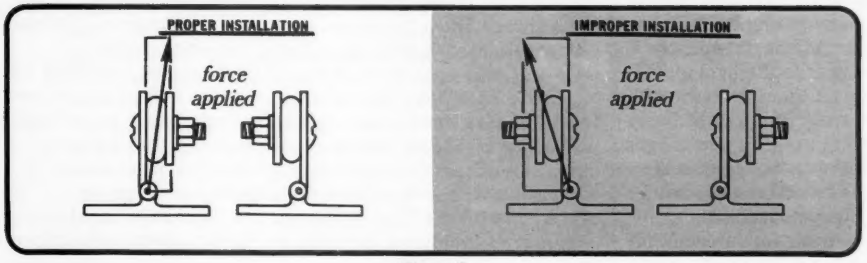


Figure 2

Illustration by SP5 Jeoffery Hoppe

CW4 Thomas W. Witten
Flight Instructor
Cairns Division
Department of Flight Training
Fort Rucker, AL

Helicopter Ice Encounters

GOOD MORNING weather, Mr. Jones calling for planning from Frankfurt to Grafenwoehr."

"Sir, the weather really doesn't look too good this morning. The hills en route are obscured in fog and light rime icing is forecast from the freezing level to 12,000 feet."

This aviator has a decision to make; there may also be an element of pressure involved to complete the mission. The aviator is ultimately responsible for the final decision to go or cancel due to weather. In some cases, regulations can be used to support the decision, and other times the aviator's judgment must be relied on.

During winter months icing conditions influence weather decisions on an increased number of flights. Flight in severe icing conditions is prohibited; and for flight in moderate conditions, the aircraft must be equipped with adequate deicing equipment. However, flight in light icing conditions is not restricted by AR 95-1.* This makes the weather decision a judgment call.

Before a professional decision can be made, a thorough understanding is essential of the factors concerning the cause of structural icing and its effect on flight. Basically, structural icing is caused by super-cooled water droplets either in the form of suspended cloud droplets or freezing precipitation which freeze on contact with a surface temperature below freezing.

Ice accretion is effected by speed. The slow forward speed of the helicopter reduces ice accretion on the fuselage. However, ice accretion may be increased on certain surface areas of the rotor blades due to higher speed.

The formation of ice on rotor blades and airframe disrupts the smooth flow of air over the surfaces causing loss of lift, increased weight and drag. Under most circumstances, the danger of increased weight is of little importance; however, the potential hazard may be magnified by loss of lift.

Another hazardous effect of structural icing on helicopters is the possibility of asymmetrical shedding. This occurs when ice is shed unevenly across the span-wise length of the rotor blades. This causes an unbalanced condition creating a one-per-rotor-revolution vibration ranging from mild to severe. Flight tests conducted have shown the possibility of asymmetrical shedding increases as the outside air temperature decreases.

During the weather briefing, questions concerning cloud tops should be asked when considering a flight where icing may occur. The temperature range and cloud layers above and below the en route altitude also may effect the weather decision. A current pilot weather report (PIREP) at this time would be of great value.

When light icing is forecast it may create a hazard if flight is continued too long. According to test project #73-04-4, after 22 minutes of programed light icing conditions the cockpit intruments became unreadable and the crew considered evacuating the helicopter. Additionally there was asymmetrical shedding from the blades, i.e., 22 feet of accumulation on one blade and 12 feet on the other.

Also, the possibility of icing intensity being greater than forecast always must be considered. For these reasons it is important to plan as many exits as possible from the icing environment.

Plans for exiting the icing environment will vary with the conditions. Descending is rarely of any benefit because the en route altitude used by helicopters is frequently very close to the minimum en route altitude.

Climbing has several advantages.

***This is sometimes supplemented by major commands.**

By climbing it may be possible to find an altitude between cloud layers or above the clouds. In some cases it may be possible to climb to colder air where the moisture has been frozen into crystals and will not adhere to the aircraft surfaces.

Freezing rain is probably the most dangerous form of icing. Freezing rain is caused by a temperature inversion where rain drops fall into a layer of colder air below. When these rain drops strike an object at below freezing temperatures they freeze, which results in a rapid buildup of clear ice. In this case climbing to the warmer air above removes the danger.

Since climbing is often the best solution to an icing problem, aviators considering a flight into icing conditions should be familiar with altitude restrictions without the use of supplementary oxygen. Also, during flight they should be alert to the symptoms of hypoxia.

In some cases, diversion may be the only means of avoiding the icing environment. For this reason it is important to consider the availability of instrumented airports along the intended route of flight including the terminal weather at these airports during flight planning.

After considering all the facts, a professional evaluation can be made concerning the hazard to safety involved. Under no circumstances should aviators ever attempt a flight when they do not feel an adequate margin of safety exists.

Special attention should be focused in areas critical to flight in icing conditions during the preflight inspection. Prior to flight in conditions where the possibility of icing exist, aviators flying the UH-1 Huey should ensure the right and left engine air inlet filters have been removed. The pitot heat, defrost the the deice systems should be checked for normal operation.

Before takeoff the pitot head should be turned on. The defrost and deice should be off during takeoff and landing but turned on prior to entering the icing conditions. The level off check is an important step during flight in icing conditions and should be completed as soon as possible.

The importance of monitoring instruments cannot be over emphasized and is especially critical during flight in icing conditions. Torque, exhaust gas temperature and fuel must be monitored closely.

Because of the loss of lift, increased weight and drag, power may become critical. An increase of 5 psi above the cruise power setting used prior to entering icing conditions may result in loss of the autorotative capabilities in the UH-1. The exhaust gas temperature instruments always should be monitored closely during operation with the deice and defrost on.

As power settings are increased to maintain airspeed and altitude, the rate of fuel consumption should be computed and the fuel available compared to the fuel required. If fuel is critical it may be necessary to recalculate for the increased rate of consumption.

When ice begins to form the rate of accumulations should be monitored. A PIREP should be transmitted as soon as the intensity can be accurately determined using the standard criteria for judging icing intensities contained in the Flight Information Publication En Route Supplement. If vibrations result from asymmetrical shedding, rigorous control activity is not recommended as this may aggravate the condition.

Because of the hazard created by ice being shed from rotor blades, during landing and shutdown ground personnel should remain well clear and passengers should not exit the aircraft until the rotors have come to a complete stop.

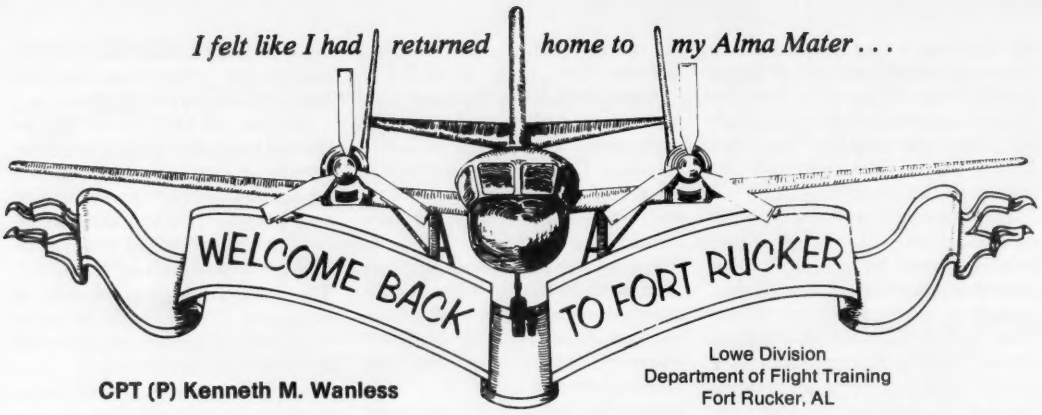
Post flight inspection is important after flight in icing. Close attention should be focused in areas that may have been damaged by ice accumulation.

As soon as possible after the flight, the crew should brief the forecaster on the weather conditions they encountered. An accurate report of the weather conditions actually encountered during the flight will be of great value to the forecaster and fellow aviators that have decisions to make.

Airframe Icing Reporting Table

TRACE	**Ice becomes perceptible. Rate of accumulation slightly greater than sublimation. It is not hazardous even though deicing/anti-icing equipment is not used, unless encountered for an extended period of time (more than an hour).**
LIGHT	**The rate of accumulation may create a problem if flight is prolonged in this environment (more than one hour). Occasional use of deicing/anti-icing equipment removes/prevents accumulation. It does not present a problem if the deicing/anti-icing equipment is used.**
MODERATE	**The rate of accumulation is such that even short encounters become potentially hazardous and the use of deicing/anti-icing equipment or diversion is necessary.**
SEVERE	**The rate of accumulation is such that deicing/anti-icing equipment fails to reduce or control the hazard. Immediate diversion is necessary.**

The rate of accumulation should be monitored on the leading edges of the airframe that extend into the airstream. Occasionally snow or ice crystals may become trapped under the windshield wipers and other places undisturbed by the normal flow of air. This is not representative of ice formation elsewhere on the airframe since it is not adhering to the aircraft surfaces.



CPT (P) Kenneth M. Wanless

Lowe Division
Department of Flight Training
Fort Rucker, AL

I REMEMBER IT WELL. The phone conversation took place on a sunny afternoon. The connection with the aviation assignments officer at Department of the Army was only fair. "Hello," I said.

The assignments officer hesitated, as they always seem to do while finding a person's first name on the computer. "Oh, hi, Ken," he responded. "So you'd like to know where you're going to be assigned." Finally he said, "You're going to be assigned to Ft. Rucker."

"Ft. Rucker—well—I had hoped for something else."

He obviously heard the disappointment in my voice. "Ken, the Army needs good aviators at the Aviation Center and you fit the bill. And besides, you'll be able to make the gate."

I knew he threw that in to placate me. "Thanks," I responded. "I'll keep in touch with you and let you know how things work out."

"Fine," he said. "And keep 'em flying."

Ft. Rucker. I tossed it over in my mind for the rest of the afternoon. Well, I rationalized, the beach is only 2 hours away and the weather is a lot better than here. And what was it my instructor pilot (IP) at Rucker had always said. Oh yes, I remember: *"Being an IP at Rucker is one of the best kept secrets in the Army."*

But was he right? Time would tell.

I had been away from aviation for more than 5 years. In fact, the closest I had come to a helicopter in that time was when we were standing on a parade field during a parade rehearsal and a UH-1 Huey, or was it an OH-58 Kiowa, flew by—and that was 2 years ago.

The possible assignments I would receive kept my mind working endlessly. Would they really make me an IP? Or, would I teach academics? I had fewer than 500 flight hours and wouldn't it be impossible to train me to instruct? Well, if they felt I had potential, so did I. But where to begin? The years of absence surely had changed everything—regulations, maneuvers, flight requirements. I sure would have to get on the right track after reporting to Ft. Rucker.

The day finally came and I arrived at the Aviation Center early on a Friday afternoon. It was hot and a thunderstorm was about to break loose. It's hotter here than I remember, I thought. And look at all those students. Red, green, blue and, yes, white hats—I remembered flight school in the distant past.

The first place I reported to was the standardization officer at the airfield to which I was assigned. I was determined to find out what had changed and how much work was required to get back into aviation. We talked for more than an hour as he mapped out a program. *Flight physical, instrument qualification renewed, regulations . . .* I sat there in shock. It was going to take some time and a lot of work to become proficient again.

Thank goodness for the weekend. I may be over the shock by Monday, I thought—just in time to begin working.

Monday morning came sooner than expected. And, as I reported to work, I was completely recovered and almost anxious to begin. The first thing I did was report to get my books. As I had expected, the pile weighed about 50 pounds. "Ugh," I said, as I lifted the books. "Hope I won't have to see the flight surgeon tomorrow."

I was ready to begin. My records were in order; I had a current flight physical and was cleared to fly. As I sat down to refamiliarize myself with the dash 10, old feelings began to surge through my body. It was as I had remembered.

After putting in a few hours on the books, I got up and took a walk out by the flight line. That smell! It rushed up my nostrils. I remember it well. Look at those birds! I felt as if I had returned home to my Alma Mater after a long time.

When I returned from my walk, I learned that I was

Continued on page 23

Directorate of Evaluation/Standardization

REPORT TO THE FIELD

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362; or call us at AUTOVON 558-3504 or commercial 205-255-3504. After duty hours call AUTOVON 558-6487 or 205-255-6487.

Training Feedback

RECENT REMARKS being heard in the field are critical of the quality of the individual entering the Army, the effectiveness of the institution in preparing Soldiers for duty in the unit, and reveal a general lack in understanding today's Army training strategies. In April's edition of the ***Digest,*** readers were introduced to an often overlooked mission assigned to DES. The Evaluation Division's role within DES is to determine the effectiveness of and identify weak areas in the Aviation Center's training. Additionally, training literature for which the Aviation Center has proponency is evaluated and numerous other interests monitored.

The External Evaluation Branch, Evaluation Division, DES has been charged with designing and implementing a feedback system which will allow commanders, supervisors and graduates to influence the training process within the Aviation Center. Also, the branch has been chartered to design, develop, organize and implement a mobile training analysis and assistance team to seek out training problems during on-site visits to units. This article is intended to inform all aviation and aviation related personnel of the training feedback initiatives being undertaken by DES—an effort in which they are such a vital part.

The questionnaire program. Questionnaires mailed to randomly selected personnel is perhaps the most inexpensive method for obtaining training feedback. The four Aviation Center programs of instruction (POI) being evaluated are the Initial Entry Rotary Wing (IERW), Flight Operations Coordinator (71P), Air Traffic Controller-Tower Operator (93H) and Radar Controller (93J). The DA approved survey instruments—questionnaires—have been designed for the graduate and the graduate's commander or supervisor. While the survey sample population does vary for each course, adequate representative sampling has been planned. Given the support of those individuals receiving questionnaires, a valid and effective impact on the respective POI can be achieved.

Success of the questionnaire effort is directly dependent upon the responsiveness of the Soldiers queried. Commanders are encouraged to support the effort. By design, all questionnaires initially are forwarded through the commander to the graduate. However, should a questionnaire not be returned within 30 days, a follow-up effort is made. The follow-up graduate questionnaires are sent directly to the Soldier. The Aviation Center is proud to boast of a very high percentage rate in the return of questionnaires in past efforts. A frustration to other schools, the fact that aviation related personnel do return questionnaires reflects accurately our motto—"Above the Best." Keep it up!

The mobile training analysis and assistance team. Although no specific title has been given the Aviation Center's team, an acronym is surely forthcoming. What the team will be called is unimportant but, the mission of the team is paramount. The team will be composed of representatives from each training directorate at the Aviation Center. Additionally, representatives from the Armor, Infantry, Signal, Intelligence and Transportation

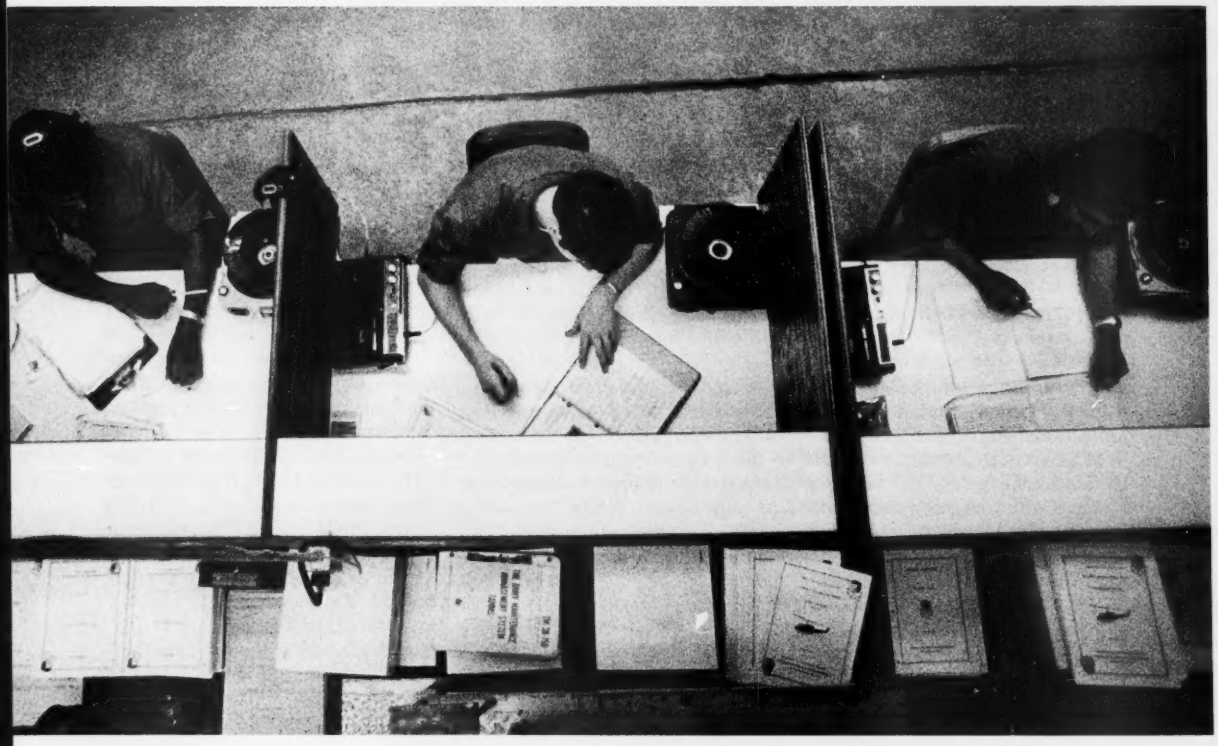
Schools will be invited to participate in the team visits. Essentially, the team's mission is to establish a meaningful and effective dialogue between you—the field Soldier—and the school in which you were trained. Objectives for the team are:

- To identify aviation unit problems regarding personnel and equipment.
- To provide training managers up to date information on the Aviation Center's training programs and materials.
- To advise commanders on training management procedures consistent with the Army's training strategy.
- To assess doctrine pertaining to the tactical role of aviation units.
- To identify training resource constraints and problems.
- To determine the quality of the Aviation Center's training through graduate evaluations at the unit.
- To assess the applicability and effectiveness of the aviation related exportable training materials.
- To provide feedback from visits to agencies within the Aviation Center.
- To help unit commanders in solving training problems.

While the mission scope is still growing, span of control will be maintained. It is realized that the team will not be the salvation of training, but it will go far toward the resolve of numerous difficulties currently facing both unit and institutional trainers in accomplishing their mission—training Soldiers.

DES is very concerned with the effectiveness of Aviation Center training and training products. Recently-assigned officers within DES and Evaluation Division come from field units in Europe, Alaska and Korea. These Soldiers are professional trainers tempered by the realities of the "real world" which inhibit training in units. DES welcomes informal feedback from all members of the Army aviation community. Send us your comments and suggestions for improvement of training. Is something working for you in training management? Let us hear from you so we might all benefit from your innovations. WE CARE. The address is: CDR, USAAVNC, ATTN: ATZQ-ES-E, Ft. Rucker, AL 36362.

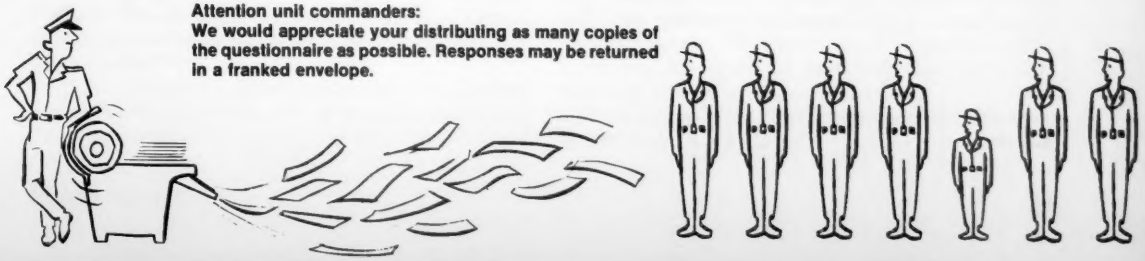
Can they do the job?



Yes!

We're interested in your opinion about how training and training management can be improved to help you do your job. Write your comments below, detach this page, fold and mail it to us.

Attention unit commanders:
We would appreciate your distributing as many copies of the questionnaire as possible. Responses may be returned in a franked envelope.



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VIEWS FROM READERS

Continued from page 11

ed, skillful man is much less likely to succumb to complacency, carelessness or poor judgment. These are areas in which all supervisors have a hand in creating improvements.

It is intrinsic in all echelons of supervision to develop and maintain an ability to emphathize. This is, walk a mile in the other man's shoes at this particular point in time. Nothing is the same now as it was in the "old days" nor is it the same as it will be tomorrow. To needlessly over task simply because past performance seems to support such a decision or because it would look bad if the word "can't" is used, is a sure way of courting long run disaster. Is it not as functionally rational to sustain a 95% mission accomplishment rate than to achieve 100% one month and 60% the next because human and material resources have been stretched past the limit? And what happens down in the trenches after a month of low achievement? Additional work hours, temptation to take shortcuts, scarcity of repair parts because of increased demands, and pressure to produce.

The scene is set for human failure which has a high probability of leading to an accident causing injury or destruction of material or both. How can any mission succeed without a concerted effort to preserve human and material resources?

Short of combat, no mission is so essential, so imperative that resources be subjected to a high risk of loss. The bottom line is, take the time to do it safely and it will be done. Crisis management has no place in aviation.

CW3 James S. Greer
Safety Officer
196th Aviation Company
Ft. Bragg, NC 28307

Welcome Back

Continued from page 18

scheduled for a flight the next day. Excitement, fear, apprehension, exhilaration—all of these filled me. What would it be like?

The next morning came early. By this time, I was nervous, but tried to outwardly portray the vision of coolness and confidence. As I approached the aircraft, Mr. Jones, the standardization IP fortunate enough to be assigned the awesome duty of refreshing me, had an unusual smile on his face. I'm sure he had been in this position before and I wondered if he relished the scene.

The aircraft started without any problems, much to my surprise.

"OK," Mr. Jones said. "Let's pick the aircraft up to a stabilized 3-foot hover." I recalled the 3-foot hover from flight school, but the *stabilized* was a new addition.

"Well, here goes," I said, with some uneasiness in my voice. The cool, confident exterior was cracking. As I increased power, everything was fine. But, then it happened. In the flash of an eye, we were somewhere above all the helicopters in sight and looking at the tower eye-to-eye.

"Not too bad," Mr. Jones responded. "But let's lose some altitude."

"Right," I answered. My exterior fully cracked, as the sweat began to fog up my visor.

As we porpoised to the takeoff pad, the controls began to feel more comfortable in my hands. Things now were coming more naturally and I began to feel some confidence.

As we progressed through the flight, everything was going very well when Mr. Jones said, "Now, let's do an autorotation!"

My mouth went dry, my hands quivered and my voice cracked. "Oh, OK." I had not done an autorotation in 6 years and did not expect to do any on the first flight.

We rolled out on final and everything was surprisingly in order. My confidence soared. "Now, let's do it," Mr. Jones said.

As I rapped the throttle to the stop and pushed the collective full down I could see Mr. Jones become airborne, only to be restrained by his seat belts. He gathered his composure on the way down and talked me through the maneuver. "Not bad at all," he said. I'm sure he was saying that only to make me feel good. But, he didn't fool me. I knew how rusty I was and that many more hours were needed for me to become proficient.

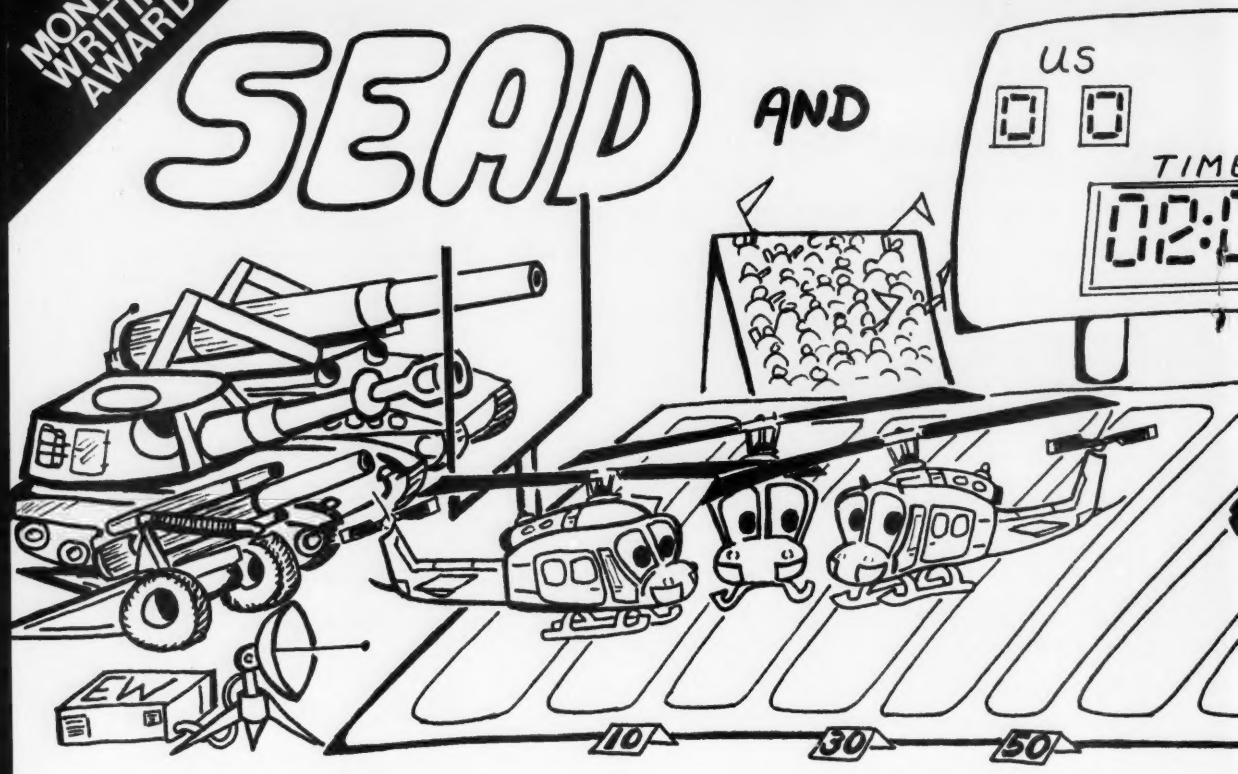
The rest of the day was uneventful, as we practiced all the normal and emergency maneuvers in the contact phase of flight training.

The actual flying portion came easier than expected. However, getting back into the regulations and relearning the instrument procedures were the most difficult aspects of returning to full flying duty. With the aid of the standardization officer, I was able to map out a program to renew my instrument qualification, learn the standards in the aircrew training manual and pass the annual writ.

In retrospect, the process of returning to flying status was greatly aided by the many capable and interested aviators who helped me. If you find yourself in the same position, I would first recommend a long talk with your standardization officer to map out a similar program. This will ensure a complete program developed for your own particular case and it will make the refamiliarization a lot easier.

Happy flying! And don't forget about the best kept secret at our Alma Mater!

MONTHLY WRITING AWARD



Captain Demetri
25th Aviation B
Schofield Barrac

At 0615 Tango 31's flight of seven UH-1H Hueys passes the bridge at ACP Rex on a heading of 092 degrees. The flight is in a tactically deployed formation carrying troops from 2-63 Infantry Battalion (Ranger). They are headed for a raid on a Threat Regimental Command Post with a mission of stalling the breakthrough attack and possibly causing the penetration force to lose momentum. Intelligence reports that Threat ADA was heavy and that an A-10 aircraft has been lost to ZSU-23-4 fire. Intelligence was able to produce the grids on two present ZSU-23-4s to the west of the objective, but others are certain to be deployed in the area. The platoon races on, each aircraft maneuvers NOE into two small pastures used as LZs. Up ahead are heard the "rumph, rumph" of the preplanned artillery fires on the objective, on the suspected ADA sites, and on the LZs.

As the aircraft enter the LZ, the UHF crackles, "143 (aircraft number 7) is taking fire! I think they're twenty-threes on the ridge at two o'clock!"

Lead acknowledges, "131, roger."

The troops jump off and head for the assembly area.

* * *

Suppression of enemy air defense or SEAD is like the "2-minute drill" that football teams use to come from behind near the end of the first half or at the conclusion of the game. Its use varies from team to team: those who conscientiously practice it do it like precision clockwork; those who never practice it never make it work.

There is one difference between SEAD and a 2-minute drill—survival. Players and fans walk home after the game, but Army aviators may not survive in combat if "the play isn't run right." The adage "We will fight as we train" is as true as ever.

This article will focus on the necessity for planning SEAD operations; on why the artillery is the logical choice for suppression; on the objectives of SEAD; and on how and with whom to coordinate SEAD fire support.

The Need. The Threat is real and growing. North Atlantic Treaty Organization aviation forces have a formidable opponent with weapons not to be ignored: ZSU-23-4 range—3,000 meters; ZSU-57-2 range—4,000 meters; SA-7 (Grail) range—3,500 meters; SA-9 (Gaskin)

Glossa
on page

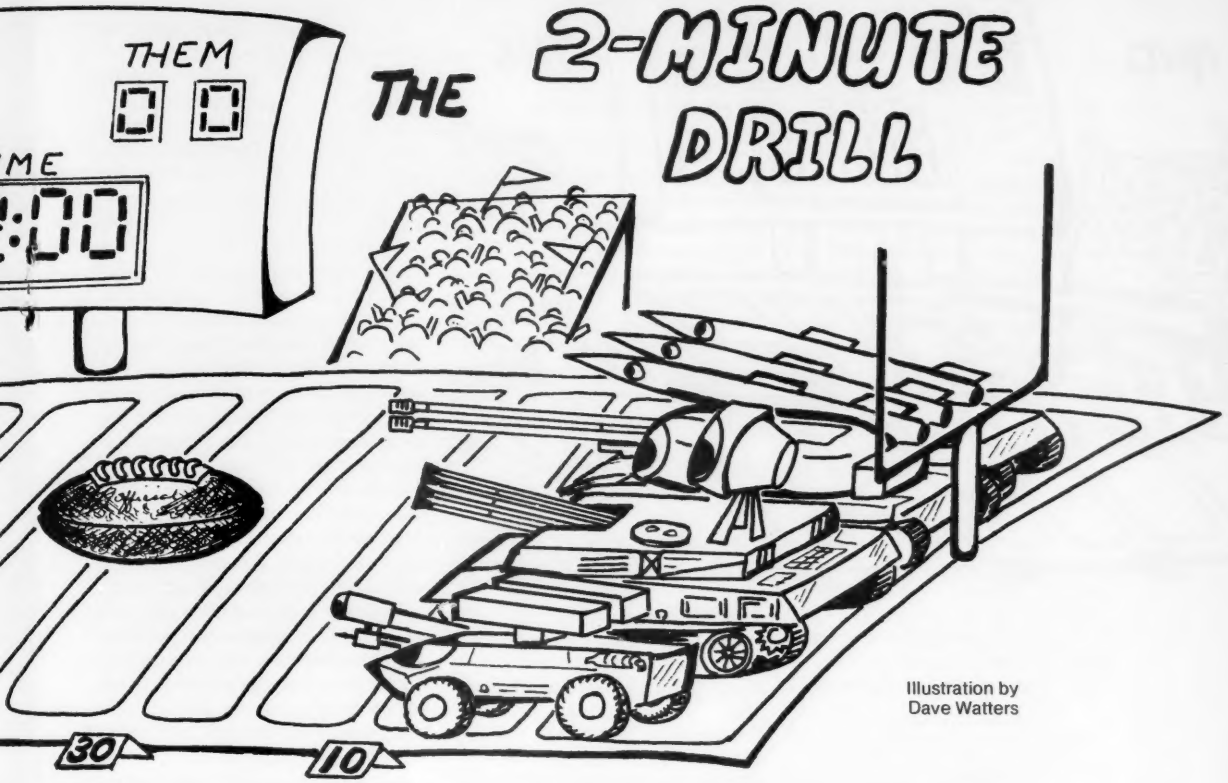


Illustration by
Dave Watters

netrio J. Tehero
tion Battalion
Barracks, Hawaii

range—7,000 meters; SA-6 (Gainful) range—35 kilometers.

When confronted with a threat motorized rifle or tank regiment, Army aircraft can expect to encounter *at least* four ZSU-23-4s, four SA-9s and a multitude of SA-7s. Adjacent units also provide overlapping fire support. Threat doctrine calls for highly mobile tactics and intensive electronic warfare which further weight their advantage.

Recent TOE changes have required assault helicopter units to give up organic weapons aircraft. This is understandable since current threat doctrine necessitates the AH-1 Cobra attack helicopter in the antitank role. However, this leaves the lift units with only door guns which are inadequate in range and firepower for long range suppression.

Glossary
page 26

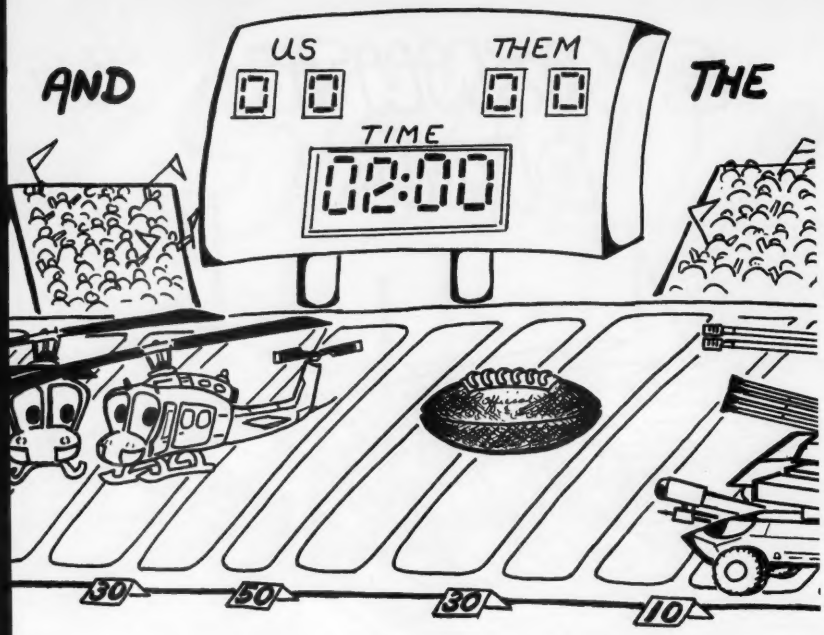
But the most glaring shortcoming of all, which points to the need for detailed training, is the lack of preparation for SEAD contingencies at the company level. The thought of countering threat air defense weapons is given only mental consideration, and, like threat capabilities, they are disregarded with a turn of the head. Coordination never is carried to the last link—the fire support officer or the direct support artillery battalion. When questioned about dealing with ADA, frequently responses will incorporate data about a mythical gunship escort or readily available artillery fire from an unknown battery to unplanned targets on unfamiliar terrain at undetermined grid coordinates. Sound familiar?

Was it ever considered that artillery units and fire support coordinators may need the practice also? TOCs and FDCs need to know who you are and they must work their aviation support elements into their priority of fires.

The Solution. The answer to this dilemma is that every air mission commander, every battle captain, every instructor pilot, every aircraft commander and every pilot must know how to coordinate SEAD support. And, whenever possible in training, this individual must make contact with "real people" and arrange for support during critical phases.

Field Manual 1-1, "Terrain Flying," provides us with the following insight:

Unfortunately, the terrain does not always lend itself to our ad-



vantage for conducting terrain flight. Therefore, even when using NOE flight, there will be times when detection must be expected. This dictates that mission planning also provide for suppressive fires . . . smoke, chaff, standoff jamming, or any other means available which can prevent the enemy from locating and/or attacking the aircraft. Whenever operating inside or near the range of enemy air defense weapons and/or artillery, the need for suppressive fires should be carefully considered and, if necessary, requested.

But Why Artillery? Field artillery is not only the most frequently employed fire support means, it also is used by attack helicopter units to suppress enemy air defense in conjunction with Cobra/scout helicopter operations. The tactical air control party in planning for CAS always first considers suppression with artillery to cover their operations. The Air Force chooses artillery first because:

- Friendly force exposure is limited to firing signatures.
- Within priorities it is usually available fire support.
- It is easy to coordinate.
- It is usually within range of close air support targets.
- It does not diminish aircraft ordnance loads prior to attack.

Field artillery offers a variety of ammunition for suppression: VT (variable time, proximity) fuzes for airbursts (good against self-propelled ADA), dual purpose improved conventional munitions for personnel and light armor, and smoke and white phosphorous for screening or obscuration. Field artillery fire is more cost effective than a close air support strike. Finally, artillery fire is "super-responsive." Current ARTEP standards require a battery to deliver immediate suppressive fire on a target located by grid coordinates within 3 minutes (first round fired in 80 seconds). If the target is a planned target, rounds must be fired in 2 minutes and 30 seconds (first round in 30 seconds).

To achieve the solution discussed earlier, i.e., that aviators must practice planning and requesting suppressive fires, it is necessary to be convinced of the need for SEAD, and convinced enough to implement it in training.

The How And Who. The flight lead or aircraft commander must plan for suppression of immediate AD targets and must ensure rapid response to them. Hence, there are planned and unplanned targets of opportunity. Aviators also must seek intelligence and locations of enemy ADA through S-2 (Intelligence) channels.

Once planned targets are determined, then coordination must be made. Fire support from the maneuver unit's supporting artillery can be arranged through:

- brigade/battalion S-3 Air;
- brigade/battalion FSO; or,
- aviation liaison officer.

If adequate time is available, coordination with the brigade/battalion S-3 Air is desirable. In some cases, it may be preferable to deal only at brigade or battalion level. The brigade S-3 Air works at the brigade FSE which is respon-

Glossary

AC	**aircraft commander**
ACP	**air control point**
AD	**air defense**
ADA	**air defense artillery**
ARTEP	**Army Training and Evaluation Program**
BAME	**brigade airspace management element**
CAS	**close air support**
DS	**direct support**
FDC	**fire direction center**
FM	**frequency modulated**
FSE	**fire support element**
FSO	**fire support officer**
ICM	**improved conventional munitions**
LO	**liaison officer**
LZ	**landing zone**
NOE	**nap-of-the-earth**
SEAD	**suppression of enemy air defense**
TOC	**tactical operations center**
TOE	**table of organization and equipment**
UHF (radio)	**ultra high frequency**
VT (fuze)	**variable time (proximity) fuze**

sible for brigade fire support to include SEAD support. Airspace management is a function of the S-3 at this level. The S-3 is assisted by aviation, air defense and Air Force liaison representatives.

Complications could result if a flight of F-4s were interdicting in the middle of the flight route. Thus the information the S-3 Air provides as a member of the BAME may be important. The S-3 Air is also collocated with the S-2, so current enemy ADA locations readily may be available. The S-3 Air also is responsible for all ADA operations in the brigade sector, and the S-3 Air should coordinate suppressive fires in support of aviation operations at key times. *The obvious advantage of planning with the S-3 Air is availability of intelligence and fire planning channels.*

If planning time is limited, the alternate coordinating individual is the maneuver brigade FSO located at the brigade S-3 (coordination with a battalion FSO may be more appropriate in some cases). The FSO is the artillery advisor to the brigade commander, and the FSO has direct communications with the DS battalion supporting that brigade.

The third individual who may assist in planning and coordinating SEAD fire is the aviation LO assigned from your unit or next higher command. Although the LO is preoccupied with advising the ground commander on aviation operations, this individual usually is collocated with a fire support coordinator. The LO may achieve satisfactory results for you.

As with most operations, face-to-face contact is optimum. However, sometimes coordination may have to be made by voice only. Whichever mode of communication is used, here is a suggested checklist of items for planning:

- Coordinating preplanned targets/times to be fired.
- Frequencies and callsigns.
- Ammunition available (VT, ICM, smoke).
- Priority of fires during key phases of aviation operations.
- Procedures for unplanned targets (immediate suppression/smoke).

* * *

Tango 31 radios on UHF, "Flight, hold your positions," and hovers to the treeline on the southeastern side of the LZ. The copilot orients the aircraft toward the ridgeline, and on the AC's signal executes an NOE popup maneuver. Within seconds after the helicopter dips below the cover of the treeline, 23 mm high explosive rounds impact on the treetops. The AC has pinpointed the ZSU-23-4 position.

The AC motions to the copilot to go up to a high hover, changes FM frequency and calls, "Romeo 17 this is Tango 31, immediate suppression grid 382476, over."

The artillery FDC answers, "Tango 31 this is Romeo 17, immediate suppression grid 382476, authenticate alpha lima, over."

Tango 31: "I authenticate Juliet, over."

Romeo 17: "Roger, out."

Within seconds Romeo 17 radios, "Shot, over!" Tango 31 acknowledges. Six rounds impact, and, after a short pause, 31 pops up for a look. The ADA site has sustained extensive damage, white phosphorous smoke is beginning to obscure the weapon.

"This is Tango 31, end of mission; break, suppress 714 and 715 (two planned ADA targets), over."

Romeo 17 acknowledges.

Tango 31 returns to a low hover and moves to the west end of the LZ. The AC instructs the flight to depart to the west 30 seconds after takeoff.

HE/VT and smoke rounds impact on the two other AD sites and Tango 31 radios, "31 on the go."

Tango 31's aircraft breaks from cover into the open, and for 30 agonizing seconds the flight waits in the LZ. Suddenly, the UHF radio buzzes, "Well, come on, flight; route's safe and clear!"

* * *

SEAD planning and coordination is neither difficult nor time-consuming. It was done automatically in Vietnam, although the targets were not ADA (at least not until the latter part of the war), but rather "hot" LZs and targets of opportunity. As trite as it may sound, SEAD preparation may run like clockwork when "the going gets rough." But . . . it will work only if it is practiced *now*.

SEAD may well become your "two-minute drill."

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The views expressed in this article are the author's and do not necessarily reflect the views of the Department of the Army nor any other Department of Defense agency

Captain Alan J. Bacon
Captain Bacon wrote this article while attending the Military Intelligence Officer's Advanced Course at Ft. Huachuca, AZ

AACC

WHILE FLYING ALL types of U.S. Air Force aircraft from fighters to communications jammers, some 12,000 Air Force aircrews per year engage in combat against Soviet-type forces. High tempo air-to-air combat, skillful maneuvering against enemy air defense weapons, and well executed attacks on opposing force (OPFOR) installations are frequent. No, this is not actual combat against the Soviet Union. This is the intense, realistic mock war training conducted at the U.S. Air Force Red Flag Training Center at Nellis Air Force Base, NV.

After determining that insufficient pilot training caused the marked increase in the loss of aircraft during Vietnam, the Air Force created this outstanding facility to upgrade pilot combat proficiency. Using the latest computer and electronic training devices, operational pilots learn to survive and win in a sophisticated high threat environment. Colonel Martin H. Mahrt, a Red Flag commander, calls the center, "the turning point in the history of fighter pilot training."

Red Flag is indeed a realistic preparation against the ominous,

Illustration by Angie Akin

NOE training alone is not enough to fight and win on the modern battlefield. Army aviators are long overdue intense, realistic mock war training equivalent to the combat preparation Air force pilots receive at Red Flag. The author feels that an Army Aviation Combat Center may be a solution

ARMY AVIATION COMBAT CENTER

ever-growing Soviet threat. However, U.S. military doctrine does not designate the Air Force as our sole air combat participant. It directs Army aviation with its preponderance of rotary wing assets to provide firepower, mobility and staying power to U.S. ground forces. Since the U.S. Army operates more helicopters than any other army or air force in the world, it is only logical that Army aircrews should be provided sophisticated training equal to Air Force Red Flag training.

The U.S. Army currently is investigating a training program similar to the one discussed below, but unfortunately the need for such a program, or the final form it will take, have yet to be justified.

Since the emergence of the helicopter in the 1950s, the Army has revolutionized tactical rotary wing training. It has significantly upgraded pilot preparedness for combat in a high threat environment through terrain flight training which encompasses nap-of-the-earth (NOE) training. Nevertheless, even though Army NOE training methodologies are tactically sound, they do not *alone* adequately prepare Army aircrews for the modern battlefield. In other words, *NOE is not enough!* There is an urgent need for a facility where Army aviators can conduct intense, realistic, mock war training equal to Red Flag's. The Army must establish an Army Aviation Combat Center (AACC) similar to Red Flag but tailored to the combat environment Army aviation will face on the modern battlefield.

Terrain Flight—A Passive Countermeasure

In response to the proliferation of sophisticated air defense weaponry seen in the 1973 Mideast War, experts developed terrain flight doctrine to enable Army aviation to survive in wars of equal or higher intensity. By definition, terrain flight is flight using the terrain, vegetation, buildings, etc., to enhance aircraft survivability by degrading the enemy's capability to visually, electronically or optically detect Army aircraft. As a result, terrain flight enables aircraft to operate below the OPFOR's lethal air defense umbrella or to operate behind terrain which blocks out the umbrella.

Terrain flight, a broad term relating to aircraft battlefield survivability, consists of low level, contour and NOE flight. Generally, low level is flown with constant airspeeds at constant indicated altitudes, 100 to 200 feet above the terrain. Contour flight is performed closer to the earth with varying airspeeds and altitudes varying with the contours of the terrain. NOE, on the other hand, is performed even closer to the earth. NOE enables helicopters to fly as close to the earth's surface, "treetop and below," as conditions permit using varying altitudes and varying airspeeds. In short, NOE is our best protective maneuver for flights approaching the forward edge of the battle area where threat weaponry is most lethal. NOE's importance cannot be overemphasized. Without NOE, Army aviation's existence on the modern battlefield could not be justified. Army aircraft above NOE altitudes could not survive exposed to minimal air defense threats.

The importance of NOE is demonstrated clearly by the emphasis placed on terrain and NOE flight in tactical helicopter training. Individual pilots and combat aviation units frequently are trained and thoroughly evaluated in terrain flight. All tactical helicopter pilots are evaluated in NOE once at a minimum, during their annual checkrides. Overall unit terrain flight evaluations are conducted during an-

nual Army Training and Evaluation Programs when all operations, excluding tactical instrument flights, are conducted at terrain flight altitudes. This integration of terrain flight doctrine into both individual and unit training is complete. Today, with few exceptions, all tactical Army helicopter pilots are competent in terrain flight operations.

Unfortunately, terrain flight alone fails to ensure that Army aviators can survive in high threat environments. Terrain flight—as classified by the recently published FM 1-2, "Aircraft Battlefield Countermeasures and Survivability"—is merely a passive countermeasure. Therefore, since tactical aviation training is based entirely on terrain flight, it provides training in passive countermeasures *only*. Did the Israeli Army win the 1973 Mideast War with passive engagements? No. Did the Pittsburgh Steelers win Super Bowl XIV with a passive attack? Absolutely not. Can Army helicopter pilots using only passive countermeasures win their first battle against a formidable force, the Soviet Army? Probably not! Terrain flight alone, to include NOE, is not enough. It is time to advance Army aviation another step. Tactical helicopter pilots must undergo *active* as well as passive countermeasure training.

Active and Passive Countermeasure Training

The framework for active countermeasure training is prescribed clearly within FM 1-2. After realistically identifying all threats against Army aircraft in a sophisticated environment, FM 1-2 prescribes active and passive procedures to counter each threat category. In essence, this doctrine shows aircrews how to survive against lethal weaponry. With limited knowledge of most aviation threats, too many nonaviators erroneously identify OPFOR air defense missiles and air defense artillery as the only threats against Army aircraft. On the contrary, while operating at low altitudes, Army helicopters are vulnerable to threats against U.S. ground force personnel as well as threats against Air Force aircraft. In order to illustrate the magnitude of this cumulative threat, prime examples of threat categories against Army aviation are listed as follows:

- OPFOR Attack Helicopter Threat
- High Performance Tactical Aircraft
- Air Defense Artillery
- Air Defense Missiles
- Artillery
- Small Arms
- Nuclear Munitions
- Biological Agents
- Chemical Munitions
- Signal Intercept Threat
- Direction Finding Threat
- Deception Threat
- Jamming Threat
- OPFOR Night Vision Threat

As shown, Army aircraft face a cumulative threat greater than the respective threats opposing U.S. ground forces and the U.S. Air Force. For the most part, these threats, representing the latest technology, can destroy low flying helicopters through direct fire, indirect fire, or target acquisition leading to direct and indirect fire.

In addition to facing threats individually, Army aircrews must be trained to contend actively with several threats simultaneously. For example, while flying at night in a toxic chemical environment, an aircraft could be acquired through radar and infrared devices alerting enemy small arms, air defense artillery, air defense missile and attack helicopter attacks. Unfortunately, the active countermeasure skills required for survival in this situation far exceed the skills developed by current Army aviation training. Today's classroom instruction on FM 1-2 is not enough. Although most tactical aviation exercises include some threats, they fall substantially short of effectively simulating the magnitude and intensity of all of the threats against Army aviation.

The answer to this training deficiency is obvious. Create an AACC similar to Red Flag that effectively simulates the threat with an intense, realistic, mock war training environment developed from our latest computer, electronic and laser technology. In other words, develop an AACC which effectively provides active as well as passive countermeasure training. As a minimum, this active training should ensure our aircrews do not encounter anything for the first time in combat that can be previously demonstrated to them during peacetime. Air Force officials recognize this and respond with Red Flag. Likewise, it is imperative for the Army officials to create an AACC. Outstanding training is provided to Air Force pilots, and equally outstanding training should be provided to Army pilots. How can we expect Army aircrews to win their first battle while grossly outnumbered in an environment exceeding the sophistication of their training? Comprehensive active as well as passive countermeasure training is the answer.

Air Superiority At The Treetops

It is urgent that Army aviation develop its capabilities to gain and maintain "air superiority at the treetops," as LTC Retsae H. Miller emphasizes in his article of the same name in the March 1979 issue of ***Military Review***. While LTC Miller effectively illustrates the importance of an advanced scout helicopter (ASH), his concepts of Air Superiority At The Treetops equally apply to the need for an AACC.

Illustration by Angie Akin

Without an AACC to upgrade pilot proficiency, Army aviation cannot achieve treetop air superiority. In general, treetop air superiority pertains to those lower terrain flight altitudes where Air Force aircraft are ineffective. Until now, the Army has enjoyed unrestricted use of this airspace with little or no threat to our airmobile forces. However, after developing an appreciation for U.S. helicopter operations in Vietnam, the Soviets expanded their doctrine for using attack helicopter and airmobile forces. As LTC Miller points out, Russia's use of helicopters in the recent Ogaden War is an excellent example of this expansion. While supporting a Cuban attack against Somali forces, Russian MI-6 helicopters flew troops, supplies and PT-76 tanks across the Ahmar Mountains to envelop a Somali strongpoint. One Arab military attache stated, "It was almost over before it started. It was the kind of maneuver that up to now has been done only on paper maps in staff colleges." This airmobility success coupled with their recent development of the HIND attack helicopter indicates the Soviets plan for extensive use of both airmobile and attack helicopter forces in future battles.

Unless we ensure our helicopter pilots are better trained than the Soviet's, the deployment of Russian attack helicopters against U.S. forces could be disastrous. At this time, the best defense against columns of attacking Russian tanks calls for highly-mobile AH-1 Cobra attack helicopters to quickly destroy these columns with tube-launched, optically-tracked, wire-guided (TOW) missiles. Like us, the Soviets know the best defense against an armed helicopter is another attack helicopter. Hence, they have armed their new attack helicopters, HIND-Ds, with air-to-air weaponry far superior to the Cobra's weaponry. If HINDs are employed in overwatch positions with Soviet tank columns, the Cobras probably will fall prey to the HIND's superior firepower. More than likely, U.S. helicopter losses during these engagements will be unacceptable, thereby allowing thousands of Russian tanks to close unscathed against our skeleton ground defenses. Furthermore, with few Cobras remaining to stop them, Soviet HINDs will be free to roam our rear areas destroying targets of opportunity at will.

As shown, the implications of the Soviet helicopter threat are ominous; HIND attacks against our helicopters could have a major impact on the U.S. winning or losing the land battle. If we fail to win air superiority at the treetops we probably will fail to win the war. Lacking the benefit of superior, realistic AACC training, Army helicopter pilots are likely to fall prey to Soviet helicopter pilots. However, a viable AACC undoubtedly will help win the land battle by enabling Army aviators to gain and maintain *Air Superiority at the Treetops.*

Red Flag Training Advancements Applicable To The AACC

In many ways armed helicopter pilots are similar to tactical-fighter pilots. Both fly armed aircraft at low altitudes in similar multithreat environments. In addition to coping with similar stresses and fatigues, both use similar reflex skills and require extensive aviation and gunnery training. Finally, in most cases, aggressiveness is the key to each's respective success. Therefore, it is logical that selected advancements in fighter pilot training also would improve helicopter pilot training. As a result, evaluations of these advancements provide additional justification for the creation of an AACC. These evaluations will show that Red Flag's purpose, realism and success have great potential for upgrading helicopter pilot training at the AACC.

Red Flag's Purpose. The primary purpose of Red Flag is to save aircrews and airframes by teaching skillful performance through realistic training. Air Force planners realized that they must emphasize quality over quantity training if they expected to defeat the overpowering Soviet threat. The "Red Baron" study of Vietnam air-to-air engagements supported this conclusion. "Red Baron" concluded that upon surviving their first 10 missions, pilots were likely to survive all remaining combat missions. During their first 10 missions, pilots actually trained themselves to survive all ensuing air combat missions. In other words, it was necessary for pilots to administer themselves on-the-job training because they had received insufficient prior combat

training. Air Force officials further concluded that improperly trained pilots are even more likely to become fatalities in today's more lethal high threat environments. Thus, the Air Force created Red Flag to provide its pilots realistic training comparable to the experience they will gain during their first 10 combat missions.

The AACC's Purpose. Although there is no similar data to confirm training shortcomings as applicable to Army helicopter pilots, unprepared helicopter pilots obviously are more likely to become fatalities than those that are properly trained. Those gaining valuable combat experience by surviving their first 10 missions undoubtedly will be better prepared for ensuing combat than those without combat experience. Despite Vietnam combat, Army aviation lacks experience in the intensity of a high threat environment. More than likely, Vietnam combat veterans, as well as newly qualified aviators, would suffer equally from the "Red Baron" syndrome.

The Air Force wisely has chosen to upgrade pilot proficiency through intense realistic training. The Army has yet to realize the value of similar training. Without Red Flag type training, Army aircraft probably will quickly fall by the wayside on the modern battlefield. Negation of the "Red Baron" syndrome before it develops in Army pilots should be the purpose of the AACC.

Red Flag's Realism. Numerous commands within the Air Force, its Reserves, and the Air National Guard annually send units to Nellis to undergo Red Flag's realistic 2-week training periods. Using the most advanced training devices, Red Flag effectively simulates the entire threat spectrum facing U.S. Air Force pilots. Its battlefield consists of 50 different mock Soviet and East German installations situated in terrain similar to East Germany. More than 640 Air Force and civilian personnel staff and operate Red Flag's sophisticated training devices, simulating Warsaw Pact-style air defenses, Soviet fighters and threat electronic warfare. Red Flag's authentic air defense system generates radar signals identical to ZSU-23-4 and ZSU-57-2 air defense artillery signals and numerous surface-to-air missile radar signals.

By monitoring their cockpit radar warning devices, Air Force pilots quickly learn to break radar locks by maneuvering away from inbound missiles and gun rounds. To reach live fire target ranges—consisting of styrofoam tanks, vehicles and mock airfields—participating pilots must successfully penetrate these air defense systems. Final determinations of all air defense kills are made by umpires evaluating videotapes taken from cameras mounted on air defense weaponry trackers. Television videotapes further monitor live fire gunnery skills during pilot attacks on mock Soviet airfields.

Within Red Flag's Air Combat Maneuvering Instrumentation (ACMI) Range, U.S. pilots engage simulated Soviet MIG-23s which are actually Northrop F-5s with Russian markings. Flying these OPFOR aircraft are specially trained Air Force instructor pilots (IPs). Throughout their combat maneuvers with other Air Force pilots, these IPs rely totally on Soviet techniques. Within the ACMI range, all aircraft altitudes and tracks are recorded by computers for evaluations and debriefings. Once again, videotape records supplement computer records for absolute verifications of aircraft kills. At the conclusion of each training day, all records of air defense systems engagements, live ordnance firings, and air-to-air combat are assembled at the command and control headquarters for detailed pilot debriefings. Here, pilots actually see for themselves if they survived the day's missions. Major Roger Curtis, Red Flag executive officer, claims:

"The difference between the pilots first and tenth mission out here is unbelievable. We can almost guarantee we'll zero in on a pilot on his first mission, but after he's seen himself shot down at a few debriefings, it's amazing the amount of evasive actions he can learn to take, using clouds, low-level flying, mountains, and other measures to keep off the enemy's radar screen."

Proposed AACC Realism. Sufficient realism for creating a viable AACC is limited only to the imaginations of its designers. Since the AACC's purpose is to negate the "Red Baron" syndrome through realism, AACC planners must concentrate on achieving quality realism. AACC training should not be limited to attack helicopter pilots only. Like Red Flag, the AACC should provide realistic training to all categories of pilots. While functioning as members of the combined arms team, aviation units must be capable of accomplishing critical missions such as listed below on the modern battlefield:

- corps covering force;
- defense of a river line;
- forward deployment of division logistics;
- theater logistics;
- attacks on builtup areas;
- and, air assaults into enemy rear areas.

Since FM 90-1, "Employment of Army Aviation Units in a High Threat Environment," requires all pilots (attack, scout, utility and cargo) to participate in these critical missions, the AACC must train all categories of pilots.

Initially, the AACC should use Red Flag-type air defense systems, live fire ranges, electronic warfare, videotape recordings and pilot debriefings. However, as shown earlier, Army aviators face a greater cumulative threat than their Air Force contemporaries. Hence, simulations of additional Army aviation threats must be included within AACC

Illustration by Gary Buchanan

realism. In other words, OPFOR attack helicopters, artillery, small arms, tactical nuclear munitions, chemical agents and night vision devices also should be targeted against Army pilots during AACC training. Like Red Flag, the AACC should focus its efforts on realistic simulations of air-to-air aircraft engagements. When flying U.S. model helicopters painted and marked as Soviet HINDs, Army IPs should use standard Soviet maneuvers for attacking other U.S. helicopter pilots undergoing AACC training. Where possible, video tapes of these air-to-air helicopter engagements should be recorded for use during pilot debriefings.

The best device for simulating several Soviet weapons is the Multiple Integrated Laser Engagement System (MILES). All direct-fire weapons systems fitted with MILES components are capable of simulating the destruction of other MILES weapons systems. For example, during a ZSU-23-4 attack helicopter engagement, lasers of both weapons systems are capable of activating destruction signals and disabling devices on opposing targets. In this case, a ZSU-23-4 laser beam hitting the helicopter will ignite a smoke grenade mounted on the helicopter's skid, thereby signalling the destruction of the helicopter. Furthermore, until reset by an AACC umpire, the helicopter's weaponry is disabled electronically. After connecting MILES components to all friendly and OPFOR direct fire weapons systems (i.e., Sagger and TOW missiles, crew served weapons, individual infantry weapons, helicopter and tactical fighter armament, air defense artillery, air defense missiles, etc.), U.S. and OPFOR units can realistically engage each other in a mock war environment.

Once all MILES devices are linked together in the computerized control center, MILES laser destruction and probability signals can be monitored and evaluated. For example, if an OPFOR AKM rifle's probability of shooting a helicopter down is .05, the AACC control computer can be programed to accept 5 percent of all AKM firings that destroy helicopters. Consequently, helicopters are simulated killed in 5 percent of the engagements. By monitoring this control computer, commanders constantly can evaluate their units' performances. Realistic victories and defeats with associated equipment and personnel losses can be accurately and instantaneously verified.

As scheduled by higher headquarters, operational Army combat aviation units should undergo 2-week AACC training exercises similar to Air Force unit training at Red Flag. Annually, on a rotating basis, Army units should report to the AACC training site. Since it is not feasible for Army units to fly their organic helicopters and heavy maintenance equipment great distances, the AACC should provide all aircraft and maintenance equipment. All necessary billeting, maintenance and medial facilities also should be provided by the AACC.

Funding for this sophisticated training operation should be commensurate with the AACC's potential for saving pilot lives and expensive aircraft equipment. At no time should realism be sacrificed for budgetary considerations. Currently, the Air Force is allotted $10 million per year to operate Red Flag. At a minimum, equal funding should be allocated to the AACC. After all, within seconds, a single ZSU-23-4, a common Soviet weapons system, easily can destroy an exposed flight of three or four UH-60 Black Hawks valued in excess of $10 million. Army crews and their aircraft are too valuable to uselessly fall by the wayside during the first few seconds of battle.

The AACC's Potential for Achieving Red Flag's Success. The revolutionary success achieved at Red Flag is best described by LTC Ernest W. Rapalee, an Air Force fighter pilot with extensive combat experience. Altogether LTC Rapalee flew 100 combat missions over North Vietnam and 160 combat missions over South Vietnam. LTC Rapalee unequivocally advocates, *"By virtue*

of the intense realistic training they receive at Red Flag, today's young Air Force pilots are undoubtedly the finest in the world. This combat training is far superior to the training given to their Russian counterparts."

As shown earlier, there are several similarities between tactical helicopter pilot training and fighter pilot training. Does Red Flag-type training have a potential for achieving equal success at the AACC? An Army aviator with Red Flag experience best evaluates this potential. CPT Joe T. Hatfield, an Army pilot with 10 missions experience at Red Flag, believes, "A sophisticated training center similar to Red Flag for Army pilots has unlimited potential for improving their abilities to survive in a high threat environment." Hence, Red Flag's outstanding training success is an accurate indicator that an AACC can achieve equal success.

Courses Of Action Capable Of Yielding An AACC

The three most obvious courses of action for creating an AACC are to establish the AACC independent of all other training facilities, to incorporate the AACC into Hunter Liggett's National Training Center (NTC), or to integrate the AACC into Red Flag itself at Nellis AFB.

Creating the AACC independent of all other Army and Air Force training facilities defeats the AACC's purpose while lacking cost effectiveness. Why create an AACC separate from existing Army and Air Force training efforts when Army ground force personnel and Air Force pilot contributions are necessary to generate a primary AACC purpose—realism? In other words, without the presence of other Army and Air Force personnel, Army aviators cannot conduct viable combined arms training. Even though these personnel and aircraft could be transported to the AACC site, associated transportation costs would dilute the cost effectiveness of this course of action. Why incur additional costs and duplications of effort when conditions conducive for joint service operations with substantial savings are available within the following courses of action?

Illustration by Angie Akin

The second course of action incorporates the AACC into the NTC. Phase I NTC, scheduled for completion in 1984, will use electronic warfare, engagement simulation, and live fire modules to train mechanized Infantry and Armor task forces. As permitted by planning considerations and funding allocations, Phase II NTC will add an attack helicopter module sometime in 1986.

Unfortunately for Army aviation, this module does not constitute the viable equivalent of Red Flag thus far advocated. Phase II NTC is designed to teach ground force commanders how to use attack helicopter assets in support of their operations. It is not designed primarily to improve aviation training. Hence, while including only attack helicopter pilots within its program, Phase II probably will fail to simulate most of the threats against Army aircraft. As shown earlier, all categories of helicopter pilots must be trained to combat all aviation threats in a high threat environment. Therefore, a single attack helicopter module scheduled for completion in 7 years falls substantially short of providing realistic combat training for all categories of Army helicopter pilots. Unless greatly expanded, *Phase II therefore stands as an unsatisfactory course of action for creating a viable AACC.*

The third course of action—integrating the AACC into Red Flag at Nellis AFB—at this time is the best and cost effective solution for achieving realistic Army helicopter pilot training. During recent Red Flag exercises, selected Army mechanized infantry, armor and aerial surveillance units have trained with Air Force units. Even though Red Flag's training devices were not designed to benefit Army units, Red Flag's realism provided valuable mock war experience to all participating Soldiers. Why not expand this joint service training to also include sophisticated training devices for Army aviation and Army ground forces?

All AACC MILES training equipment, all NTC training modules and all existing Red Flag facilities should be combined at Nellis AFB to constitute the most comprehensive, advanced and cost effective joint service training effort in the world. Perhaps, this training center is the answer to the ever-increasing conventional arms imbalance between the United States and the Soviet Union. By undergoing sophisticated, intense, realistic training, a smaller U.S. conventional force could develop the capability to defeat a much larger but less prepared Soviet force. In essence, such a combat ready U.S. conventional force would constitute a viable deterrent against all possible Soviet conventional warfare aggression. Although outnumbered in conventional military assets, the United States' computer, electronic and laser technology is far superior to the Soviet's. Why not use this technology to develop the strongest, most prepared conventional Army and Air Force in the world? We can achieve this with a viable AACC training program.

I urge immediate action to create an AACC similar to Red Flag, but tailored to the combat environment Army aviators will encounter on the modern battlefield. Like Red Flag, the AACC's success will be revolutionary, for the AACC will develop the finest young combat ready helicopter pilots in the world.

Reporting Final

Late News From Army Aviation Activities

FROM HQDA

Army Astronaut Candidates Selected. The U.S. Army Astronaut Program selection board convened at Department of Army during the period 17 to 19 December 1979 for the purpose of selecting Army applicants for nomination and referral to the National Aeronautics and Space Administration (NASA) for acceptance into the NASA Astronaut Candidate Training Program. Below is an alphabetical listing of the 20 applicants selected by the board for nomination to NASA:

CPT(P) Adamson, James C.	CPT(P) Lasche, George P.
MAJ Almojuela, Thomas N.	MAJ Morris, Patrick M.
LTC Barron, Nicholas	MAJ Parker, Edson O. III
MAJ Brennan, Michael W.	CPT Prier, Ronald E.
MAJ Dowd, Douglas L.	CPT Scott, Rhonda L.
MAJ Edwards, Thomas E.	LTC Silsby, Harry D. IV
CPT Green, Andrew J.	MAJ Spring, Sherwood C.
MAJ Hadley, Arthur T. III	MAJ Vollrath, Thomas L.
MAJ Izzo, Lawrence L.	MAJ Wilson, Grady W.
CPT(P) Lasala, John E.	MAJ York, Robert J.

Applications of the above nominees were forwarded to NASA last month for further consideration for acceptance into the NASA Astronaut Candidate Program. Current NASA plans tentatively call for the final selection of only 16 to 20 candidates on a national basis. The results of the NASA selection process are not expected until this May.

(DAPE MPO C)

OER Training Packages. The U.S. Army Administration Center at Ft. Benjamin Harrison, IN, is developing two self-study training packages on the new Officer Evaluation Reporting System—one for all officers and one for Soldiers in MOS 75Z and 75D who are tasked with administering the new system. **The officer training package** is available as AG Subcourse 15. It provides objectives, instructional material and self-evaluations for the tasks involved for each member in the rating chain. **The enlisted package,** AG Subcourse 18, will be available 1 March. It will include information necessary for administering the new OER system. Both packages are available from the Army Institute of Professional Development, U.S. Army Training Support Center, Newport News, VA 23628. Requestors should use DA Form 145 to obtain the packages.

(FOCUS-MILPERCEN)

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FROM FORT RUCKER

YCH-47 Acceptance (*By Robin Drew*). More than 300 people attending the CH-47D Chinook helicopter Army acceptance ceremony on 13 December witnessed the key to the aircraft pass hands three times before it came to rest with Colonel William E. Crouch, commander of the Army Aviation Development Test Activity.

Colonel Crouch and the people in his command will give the newly designed aircraft a series of development tests until 21 March. They will determine if the helicopter meets all the specifications outlined in the contract.

About nine pilots will be on the testing team. One of the first tests will determine if the helicopter will lift its maximum weight, 50,000 cargo pounds. The test will be done by loading the outside sling with such combat equipment as artillery pieces, Jeep or dump truck.

This equipment also can be loaded inside the craft. Thirty-three Soldiers can be transported in the helicopter.

After the testing is completed at Ft. Rucker the aircraft will be flown to Ft. Campbell, KY, to undergo operational testing. The operational test will determine whether the aircraft can fly on actual field missions. These tests will be in a simulated environment.

Mr. Otis H. Smith, president of the contracting company which designed the aircraft, presented the key to Lieutenant General Robert J. Baer, deputy commanding general of Materiel Development, U.S. Army Materiel Development and Readiness Command, Alexandria, VA.

Mr. Smith said his company was proud to have done this work. He added that he is confident that the 3 years of hard work has accomplished the tough but realistic objectives outlined in the contract. He said the testing will validate that.

The key was eventually passed next to Major General John J. Koehler Jr., commanding general of the U.S. Army Test and Evaluation Command, Aberdeen Proving Grounds, MD, who passed it to Colonel Crouch. (For more on the acceptance see page 4.)

New Flight Surgeons. Twelve Army doctors received their Flight Surgeon Badges 30 November 1979 after completing the 7-week Army Aviation Medicine Basic Course at the Aviation Center. Captain James W. Woodham of Bainbridge, GA,

was the Distinguished Graduate. The Honor Graduate was Major James G. Haller.

The course is taught by Ft. Rucker's Aeromedical Activity of the Army Aeromedical Center. It requires the surgeons to complete 5 hours of rotary wing and fixed wing flight training. Doctors taking the course also learn special information which applies specifically to aviators and air traffic controllers, such as the medicines these persons are not permitted to take and how to record each treatment.

(USAAVNC-PAO)

New Flight Surgeons. **Twelve officers were graduated from the Army Aviation Medicine Basic Course taught at the Aviation Center. They are from left, first row, COL Harry Lee, LTC Arthur C. Wittich, CPT Dale E. Long and LTC Harry Glenchur. Second row, 1LT John M. McNamara, LTC Leslie M. Burger, MAJ James G. Haller, CPTs Neil A. Jacobson and Shawn L. Berkin. Third row, CPT George K. Ching, instructor LTC Graham H. Chestnut, CPT James W. Woodham and LTC Clifton R. Brooks Sr. LTC Brooks was a graduate of the Army Aviation Medicine Orientation Course which is the final 2 weeks of the basic course. (U.S. Army Photo by SP4 Jim Valentine.)**

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FROM TRADOC

Battle Reports. The U.S. Army Training and Doctrine Command publishes an excellent series of TRADOC Bulletins called *Battle Reports,* which contain valuable and current information about threat weapons, equipment and tactics, as well as methods for countering same. Information for these *Battle Reports* comes from simulations, field exercises, and intelligence sources and serves to rapidly disseminate specifics concerning how to fight and how to support on the modern battlefield. Twelve issues of the series have been published at this writing, the most recent (August 1979) of which is titled "Combat Vehicle Engagement." Future issues will discuss Soviet airmobile capabilities, TOW gunnery and tactics, terrain reinforcement, electronic combat, Soviet chemical operations and countermeasures, Soviet river crossing operations and other subjects of current interest.

Comments from the field indicate that many units are unaware of or are failing to receive copies of *Battle Reports* as they are published; confusion also exists concerning how to order additional copies. Units should confirm that block 432 of DA Form 12-11B reflects the number of copies of TRADOC Bulletins (*Battle Reports*) desired for initial pinpoint distribution from USAAGPC, Baltimore. **If block 432 is not completed, units will receive no initial distribution.** Pinpoint account holders wishing to order additional copies of the TRADOC Bulletin series must request them from USAAGPC, Baltimore, using Misc Pub 18 and DA Form 4569. Refer to DA Pam 310-3 and DA Cir 310-1 for current indexes of doctrinal, training, organizational and "how-to-fight" publications.

A new distribution system for TOE units, scheduled for implementation in 3d Qtr, FY 80, may alleviate some current distribution problems. This "PUSH" system eventually will replace the DA Form 12 series system, excepting classified requirements, in TOE units only. TDA activities are unaffected and will continue to use the present system.

Suggestions for topics for inclusion in the *Battle Report* series may come from any agency or individual, and should be addressed to Commander, TRADOC, ATTN: ATDOC-DDD, Ft. Monroe, VA 23651.

(ATDOE-DDD)

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FROM MARYLAND

Get Your Maps Here. "Pssst! Soldier, need a map?" If the answer is yes, the place to go is the 758th Engineer Company, Annapolis, MD. The Army Reserve engineer unit is a base map depot which has been supplying maps and charts to American military units worldwide since 1976. Starting with 23 requests the first year, the 758th Engineers mailed out more than 45,000 maps in 1979 to nearly 300 customers.

With 250,000 maps in stock, virtually no request is too large or too small. A typical drill evening, 12 December, found the 758th filling an order for 30 maps from the Maryland Army National Guard and processing a request for 3,650 maps from the 87th Maneuver Area Command in Birmingham, AL.

According to Sergeant First Class Calvin R. Franklin, operations sergeant for the 758th, the engineers stock topographical maps, nautical charts and air crash search and rescue maps. The entire world is available in the 1:250,000 Defense Mapping Agency 1501 Series, and the depot carries the U.S. Geodetic Survey maps (1:24,000) for the eastern United States. Maps of Korea, Germany and the Middle East are available.

Commanders who wish to order maps should write the 758th Engineer Company, U.S. Army Reserve, Annapolis USAR Center, RFD 2, Box 270, Broad-

neck Road, Annapolis, MD 21401. Telephone orders may be called to (301) 757-1673. Requestors should give the series, scale, map name, quantity and sheet number, if known. Turn around time for maps in stock is 1 to 2 weeks. Special orders take a month. There is no charge for the service.

The 758th carries special edition maps of East Coast installations frequented by reserve units—Ft. Drum, Ft. Meade, Ft. Devens, Ft. Bragg, etc. There is also a limited supply of state and local maps and European highway maps. The low-key map distribution service provided by the 758th Engineers is an example of the Army Reserve supporting the Total Army while training the citizen-soldier. **(USAR)**

HDL Change of Command. Colonel William R. Benoit assumed command of the Harry Diamond Laboratories (HDL) on 3 December 1979. He succeeds Colonel Clifton R. Goodwin who had been HDL's commander since February 1978. HDL is the Army's lead laboratory in fuzing and also does extensive research in electronics, radars, fluidics and lasers. This laboratory is one of seven laboratories of the Army Electronics Research and Development Command. **(PAO-HDL)**

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South Carolina Army National Guard helicopters fly over State House as the Veterans Day Parade is brought back in Columbia. More than 25,000 people gathered for the largest military parade held in South Carolina since the Vietnam War. (Photo by SFC Phillip Jones.)

IN CASE YOU MISSED IT

ATC Reorganization. Army tactical air traffic controllers in the CONUS now have units they can call their own, thanks to a recent reorganization of CONUS tactical air traffic control operations. Last October two new Army air traffic control (ATC) battalions emerged from the various units in the states that once provided tactical ATC services. Charged with the mission of providing Army air traffic management within division and corps rear areas, the new battalions brought together tactical ATC personnel who formerly found themselves assigned to aviation, infantry, armor communications and even cavalry units.

Headquartered at Ft. Hood, TX, the 16th ATC Battalion provides tactical ATC support to elements of the III Corps. Its units include the 68th ATC Company (Forward), Ft. Sill, OK, and the 57th ATC Company (Forward), Ft. Lewis, WA.

The 58th ATC Battalion, headquartered at Ft. Bragg, NC, is composed of the 192nd ATC Company (Forward), Ft. Campbell, KY, and the 245th ATC Company (Forward), Ft. Bragg. (A platoon of the 192nd is at Ft. Stewart, GA).

The formation of the new battalions was the final phase in the reorganization of Army tactical air traffic control under a single manager, which is the U.S. Army Communications Command headquartered at Ft. Huachuca, AZ.

Black Hawk Fourth Year Production Authorized. The Sikorsky Aircraft Division of United Technologies Corporation was authorized by the U.S. Army last November to proceed with the fourth year production program for 94 UH-60A Black Hawk helicopters valued at $257.3 million. This brings the total number of Black Hawks authorized for production to 255. The first production UH-60 rolled off the final assembly line in September 1978 and was delivered to the U.S. Army a month later. In June 1979 the 101st Airborne Division (Air Assault) at Ft. Campbell, KY, became the first combat-ready unit to receive the UH-60.

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Medal of Honor Holder visits Ft. Rucker. **Lieutenant Colonel Patrick H. Brady views his painting at the U.S. Army Aviation Museum last December. A Medal of Honor holder, LTC Brady evacuated 51 wounded men in dense fog and under enemy fire on 6 January 1968, in Vietnam. (See "Out of the Valley of Death," May 1970 *Aviation Digest* for an account of the action for which LTC Brady was awarded the Medal of Honor.)**

PEARL'S

Personal Equipment & Rescue/Survival Lowdown

If you have a question about personal equipment or rescue/survival gear, write PEARL, DARCOM, ATTN: DRCPO-ALSE, 4300 Goodfellow Blvd., St. Louis, MO 63120

You Can Do It Too

We asked for and received permission to use the following letter to "PEARL" in its entirety and are sure that it will prove interesting.

Dear Pearl:

Don't like to admit this, but prior to my attending the Fifth United States Army Life Support Equipment Workshop 79-1 given at St. Louis, MO 10 to 14 September 1979, I did not know what ALSE stood for. In fact I did not even want to attend the workshop.

After the first day of the ALSE workshop, I found myself (don't like using an old saying) thinking, eating and sleeping ALSE.

Upong returning home, the first thing I did was ask my supervisor MAJ Paul D. Alford Jr., if we could have a meeting to include the standardization pilots to discuss an ALSE program. MAJ Alford concurred. This meeting lasted about 2 hours.

I feel because of the workshop, I was able to present to MAJ Alford many, many good reasons why we needed to initiate an ALSE program. I received and continue to receive 100 percent backing/support from MAJ Alford. The following has been completed.

a. After being back on the job for 2 days, we assigned lockers to all crewmembers. Crewmembers are now required to keep their flight equipment in the lockers. In the past, I feel most equipment was kept in the back of crewmembers' cars, etc.

b. I located a test set, battery, TS-2530A/UR in one of the aviation units.

c. I located two survival kits (hot climate). Most items had expired.

d. A direct exchange program has been initiated.

e. I was able to get and put together a work bench, get a few tools and a room for our ALSE workshop.

f. Because of the workshop in St. Louis, I have the knowledge of how and where to order spare parts for helmets and have the capability to rebuild same. In addition I am now able to order refill items for the survival vest, SRU-21P.

g. I am receiving 100 percent cooperation from all crewmembers. They feel that something good and necessary is now being done for them and they are showing their appreciation.

h. I have made an ALSE inspection form so that I can keep records of when inspections were performed. (I inspect the equipment by using the ALSE inspection checklist dated June 1979.)

In closing I feel that I have just started and have a long way to go. The credit for our program here in New Orleans has to go to all of the people who put on the workshop in St. Louis, and inspired me in this direction.

The following is a list of things now in progress.

a. An ALSE SOP.

b. Stock cards for records of spare parts and refill items.

c. Request for a refrigerator.

d. Request for necessary publications not yet on hand.

I feel that my attendance at the workshop in St. Louis was very worthwhile to me and to all individuals that attended.

MSG Bartholomew J. Dawson
Louisiana ARNG
ALSE Technician

Cuffed Or Collared

Recent queries from the field indicated that the current Army Master Data File (AMDF) had deleted all reference to the OD Nomex cuffs, NSN 8315-01-024-5725. This is not so says PEARL, who found that the NSN is still alive and listed. A Code 01 identifier must be found in the back portion of the AMDF (and they are listed in numerical sequence). Follow the same procedure as you use on the Code 00 designator.

We also have been asked to reidentify the sage green cuffs and collars, so here they are: 8315-00-275-2870 for the cuffs, and 8315-00-275-6195 for the waistbands. (Two collars can be fabricated from one waistband.) Should you happen to have a copy of the August 1975 issue of the ***Aviation Digest***, these items are identified on page 47. Keep those PEARL and FLIGHTFAX articles. They contain a lot of valuable information.

Marker Distress Light

Recent inspection of a marker distress light revealed that the light would not work, but a whining sound was heard. The battery was tested and found to be

Debbie Fuentes

Photo by
Tom Greene

operationally acceptable. The battery was installed in another distress light and the light functioned perfectly. The bulb in the inspected light showed a dark or burned area on the end of the U-shaped bulb. The item manager will check this out and will furnish inspection guidance to the field.

Fire Extinguisher

During a normal turbine engine inlet cleaning operation the nozzle came off the wand and was later ingested into the engine when the engine was started. A closer examination showed that the spring which holds the three steel balls and in turn holds the nozzle on the wand had failed. We recommend that this type fire extinguisher not be used for engine flushes until a fix can be determined. This is not to be construed that we consider this type fire extinguisher as life support, but it is good information.

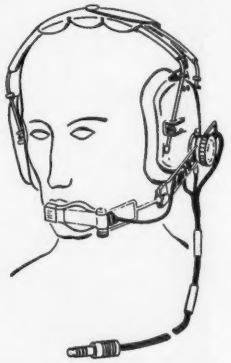
The Elusive Microphone

The headset-microphone used in fixed wing aircraft such as the C-12 and other VIP type aircraft is the H-157/AIC. It is designed to provide "handfree," high-intelligibility communication in aircraft at altitudes where the use of an oxygen mask is not required. The headset provides improved comfort and produces minimum fatigue compatible with optimum intelligibility. Earphone shells and earphone shell pads protect the operator from aircraft noise. The headset consists of headset H-158/AIC and microphone M-87-AIC, with the microphone mounted on the headset. Both components are carried as separate stock items. Although the headset-microphone is rugged, reasonable care should be used to prevent unnecessary damage. We are providing you with this information as we have been receiving queries from the field as to how to adjust and properly maintain this headset. The boom is provided with a mechanical joint which allows the microphone to be swung away from the face when an oxygen mask is used. Thumbscrews are provided for easy adjustment. (Most of the older models had set screws that required use of a screw driver.) The "ball" swivel joint must still be adjusted with a small screw driver. When these components get to the point where they do not hold their position, they should be changed out. The figure (right) graphically illustrates this headset. Instruction sheets are available upon your request to PEARL.

The "Learning" Experience

There is a wide range of expertise represented among the aviation safety and life support system staff members. A recent report analyzed by one flight surgeon goes like this: An experienced aeromedical specialist who is also a pilot of long standing, became confused during approach after 1.5 hours of flight at 12,000 to 13,000 feet. He porpoised his landing and made a go-around. He eventually completed a successful landing. He suspected oxygen deficiency.

On telephone callback, the flight surgeon learned that the pilot's last meal before takeoff had consisted of clear broth and a candy bar. "Possible hypoxic episode," he deduced, "but possible hypoglycemia as well." The flight surgeon favored the latter because confusion persisted to a low altitude in an acclimatized person and because symptoms cleared rapidly after the pilot became "frightened" during initial attempt to land. Surge of adrenalin in such a situation will produce a very rapid increase in blood sugar level. The reporting pilot was counselled about the avoidance of hypoglycemia by use of protein meals. Oxygen on flights at such altitudes would be wise as well. Experience can be a good teacher and this article is meant as a reminder to us all.



Headset-Microphone H-157/AIC

Headset H-158/AIC

Microphone M-87/AIC

NOTICE: Ex-Saber, Playboy, Raider, Dragon

Were you with the Utility Tactical Transport (UTT) Company, the 68th Aviation Company or the 197th Aviation Company between June 1962 and August 1966? If you were and as an ex-Saber, Playboy, Raider or Dragon are *interested* in attending a get-together in conjunction with the AAAA convention which will be held 11 to 13 April in Atlanta, GA, please contact LTC James E. Van Vleck, 1 Deer Run, O'Fallon, IL 62269. If there is enough interest a get-together will be organized

The instrument flight log—properly prepared—will determine whether or not you have a smooth flight and will help you "stay ahead of the aircraft."

CW3 Charles E. Cook
Department of Flight Training
Cairns Army Airfield
Fort Rucker, AL

EVERY AVIATOR is familiar with use of the flight log. FM 1-5, Appendix C, recommends use of the Army Aviation Instrument Flight Log (DA Form 2283). The log:

- Provides a concise summary of data required to execute an IFR flight.
- Provides inflight revision of data.
- Provides an accurate record of the flight.
- Supplements required IFR publications.

There isn't an Army publication that provides assistance to the aviator in completing DA Form 2283. We are familiar with the term, "staying ahead of the aircraft." To do this, computations need to be accomplished during the planning phase that will help reduce the workload in the cockpit during flight.

The following are a few suggestions to assist in completing the flight log and some tips on how the information may assist the pilot in flight.

The example flight will be IFR from Cairns AAF to Troy Municipal Airport, with a 10-minute delay at Banbi intersection to practice holding, followed by a localizer approach at Troy Airport. The amount of flight planning will depend upon the time available prior to the mission; therefore, planning should be accomplished by working from the essential to the "nice to have."

Glossary

AAF	**Army airfield**
ELA	**en route low altitude**
ETA	**estimated time of arrival**
ETE	**estimated time en route**
ex	**example**
FM	**field manual**
IFR	**instrument flight rules**
NAVAID	**navigational aid**
pph	**pounds per hour**
SID	**standard instrument departure**
VOR	**very high frequency omnidirectional range**

Essential Information:

To complete the flight log, we will attempt to follow the sequence you would in planning the flight. After reviewing the ELA, IFR supplement, appropriate SIDs and approach procedures, we will indicate the *takeoff aerodrome* and all *en route checkpoints* in the Route (Checkpoint) column (item 1, figure 1).

To preclude fumbling through SIDs or approach procedures for frequencies, we will note the *required frequencies* for radio checks at the top of the flight log (item 2, figure 1); e.g., ground control clearance delivery and tower.

Next, we will note *nonstandard takeoff minimums* in the Departure

Aerodrome box (item 3, figure 2). Then we extract the required information from SIDs and ELA charts; e.g., desired course, distance and frequencies (item 4, figure 1).

NOTE: You may desire to indicate Morse code identifiers, station frequencies and radials or courses to identify intersections at this point. To preclude filling the flight log with so much information that it's confusing, it may be easier to check your ELA chart to identify stations and check position.

Use of an accent marker or highlighter on such items as NAVAID frequencies and intersection radials or courses will assist in identifying them during flight. Remember, the idea is to *highlight only those necessary items*—too much highlighting defeats the purpose (figure 2).

Now that we have the desired courses and distances, we can compute *ETEs* for each leg of the flight. You will notice that we have divided the Magnetic Course block into two sections—desired course and estimated wind correction. The wind correction and ETEs may be highlighted for easy identification during flight (item 5, figure 1).

NOTE: The Takeoff block has been relocated to the ETE block for ease of addition in flight (item 6, figure 1). The original Takeoff box has been replaced with the weather briefing void time (item 7, figure 1).

Now we have sufficient information to determine *fuel required* for the flight. This procedure may vary from simple to complex, depending upon whether—

- The mission is a single flight or multiple stopover.
- You plan to refuel at intermediate stops.
- Or not you have auxiliary fuel tanks.

First, we will deal with our example flight. We must know how much fuel is available for planning purposes. For this example, we will use a UH-1H Huey with a crashworthy fuel system. Total usable fuel available is 206 gallons (209 gallons total less 3 gallons not usable) or 1,339 pounds (see dash 10). We are interested only in fuel available at takeoff, so substract the amount we expect to use during runup and hover. We estimate needing 200 pounds to complete runup, radio checks and hover to the takeoff pad.

Performance charts will provide a planning consumption rate for the particular aircraft and mission requirements. In this example, we will use a consumption rate of 500 pph.

Initially, we had 1,339 pounds of fuel available. After subtracting 200 pounds for runup we have 1,139

FIGURE 1

ARMY AVIATION INSTRUMENT FLIGHT LOG

For use of this form, see AR 95-63; the proponent agency is the Deputy Chief of Staff for Operations and Plans.

ATC CLEARS R-12345 TO

(2)

VOR 111.2, ILS 109.7, NDB 900, 600, 212

CLNC 370.3, 133.75, GND 248.2, 121.9, TWR 241.0, 126.2

TIME: TAKE OFF	TIME: LANDING	DISTANCE: TOTAL	FUEL: REQUIRED (8)	FUEL: AVAILABLE
WX Void (7) 19:15	(4)	54.6	1+32 768	1185 (10)

ROUTE (Check Point) (1)	IDENT / FREQ	MAG CRSE	LEG / REMAINING	ETE / ATE	ETA / ATA	ALTITUDE / GND SPD	REMARKS
▽ 100-¼ (3)	OZR	016°			(6)		
OZR	111.2	021°	54.6	T/O	18:50	(12)	
△	RRS	337°	18	:15	19:05	2000	
SKIPO	111.6	331°	36.6	(5)	19:06	73	
▲	RRS	337°	9	:07	19:13	3000	
CLIOS (13)	111.6	331°	27.6			74	
△	TO	280°	10	:08			
BANBI	365	267°	17.6			74	
△			17.6	:12			
BLOOD						91	
					(9)		
					1100	19:15	
					970	19:00	
					130	15	= 520
Fuel 24	(11)				BO	21:10	
Eng 93	80°	EGT	91.3%	N_1		- :30	
Xmsn 55	75°	510°	25	Torque	Res	20:40	

POSITION REPORT

IDENT	POSITION	TIME	ALT	IFR (VFR)	EST NEXT FIX	NAME OF SUCCEEDING REPORTING POINT

DA FORM 2283, 1 AUG 66 EDITION OF 1 MAY 60 MAY BE USED

pounds for the flight. With 1,139 pounds of fuel at a consumption rate of 500 pph, we have 2 hours and 17 minutes of flight time. This figure will be compared to total fuel required for the flight to ensure that sufficient fuel is available. *Remember, this figure is for planning purposes only.*

Now we must determine the amount of fuel required for the flight. So, combine total ETEs, planned delays, time required for approach and landing and 30 minutes for IFR reserve (flight 1, figure 3). Reserve computed as per proposed change to AR 95-1 (i.e. from former 45-minute IFR reserve to 30-minute IFR reserve). We find the total fuel requirement to be 1 hour and 32 minutes or 768 pounds. This is entered in the Fuel Required block of the flight log (item 8, figure 1). *You will notice we enter both the total time and total number of pounds* (1+32, 768).

NOTE: The fuel gauge always will read the total amount of fuel in the tanks and is not corrected for the 3 gallons (approximately 19.5 pounds) of unusable fuel.

It will be necessary to compute a *fuel consumption check* during flight. The area indicated at item 9 (figure 1) is designed to be a fill-in-the-blank fuel consumption check. The initial fuel check is entered in the highlighted blocks and, when the second check is completed the second time, the amount is entered in the remaining blocks. Then consumption rate is computed.

To determine remaining available flight time, take the amount indicated on the second fuel reading taken for the consumption check (970 pounds available at 19:15) and apply the consumption rate (520 pph) to determine total available time left to fly (970 pounds at 520 pph=1:55). Now add the total available time left to fly (1:55) to the time of the second fuel reading (19:15) and you have the *burnout time* (19:15 + 1:55 = 21:10 burnout). To determine the time we will enter our IFR reserve, just subtract 30 minutes from the burnout time (21:10 − 30 minutes = 20:40 reserve).

Since we computed our fuel requirement at a planned consumption rate of 500 pph we must determine if there is sufficient fuel to complete the flight and maintain a 30-minute reserve.

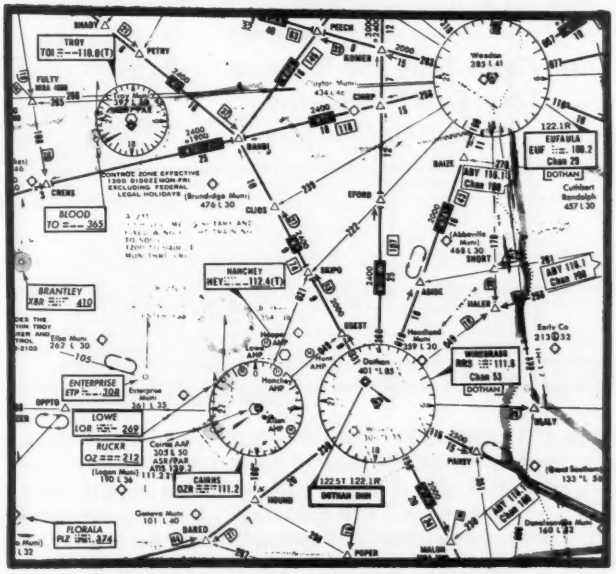
The following procedure may be used at any point during the flight to determine if there is sufficient fuel available to complete the flight and maintain a 30-minute IFR reserve. Begin with the total time of flight (fuel requirement 1+32), subtract the time already flown (example: 25 minutes), and the result will be the total time left to fly plus the 30-minute reserve. Apply the current consumption rate to this time, and you will be able to determine fuel required to complete the flight and maintain the 30-minute reserve (1+32−0+25=1+07 at 520 pph = 580 pounds). We can compare the resultant figure to the fuel gauge reading to determine if sufficient fuel is available to complete the flight and maintain the reserve.

Nice-to-Have Information:

As mentioned earlier, the following information is not critical to the flight but may be placed in the "nice-to-have" category. During the level-off check we can note *pressures* and *temperatures* to alert us of impending malfunctions (item 11, figure 1). We may want to note the *forecast winds aloft* or take them from DD Form 175-1.

Now that we have expended a great deal of energy completing the flight log, how can we use the information during flight? On our kneeboard, we should have, as a minimum, the following items in the order we expect to use them during flight: scratch paper, ELA chart, flight log and SIDs. Of course we have readily available all other publications required for the flight. During runup procedures, all required radio frequencies are available to preclude fumbling through other publications. A space is provided at the top of the flight log to copy the IFR clearances, or you

FIGURE 2



Note: The Enterprise beacon has been changed to Boll Weevil, identifier BVG, as per current IFR supplement.

may desire to copy them on your scratch pad. You may indicate *clearance limits* on the flight log by extending the line in the Route column as indicated. Assigned altitudes may be entered in the Altitude block (item 12, figure 1) (example: Cross Skipo 2,000, maintain 3,000).

Required *position reports* may be indicated by filling in the intersection symbols (item 13, figure 1); e.g., Army Copter 12345 report Clio's intersection. Prior to takeoff, we will check our weather briefing void time and update if necessary.

At takeoff, we will note the takeoff time (item 6, figure 1) and fuel available (item 10, figure 1). We plan to track the 021 degree radial of Cairns VOR with an anticipated wind correction of 016 degree (item 4, figure 1). To determine the *ETA* to our first checkpoint add item 5, figure 1 to our takeoff time (item 6, figure 1).

Upon reaching our first assigned altitude, we complete our *level-off checks.* When we arrive at Skipo intersection, we turn to a heading of 337 degrees to track the 331 degrees radial of the RRS VOR and note our time of arrival (19:06). We add the estimate to the next checkpoint to compute our next ETA. Any great variation in ETEs will indicate a necessity to recompute remaining ETEs with current winds and also to recompute fuel required. We will continue computing ETAs and updating clearance data as the flight continues.

The flight log provides us with:

- Information to remain up to date on the progress of our flight.
- Additional information to compute fuel requirements and monitor aircraft performance.

A couple of spare DA Forms 2283 may come in handy should we need to recompute our flight plan. Also it is a good idea to complete a flight log for your alternate—just in case! Pilot and copilot should complete a copy of the flight log. Comparison between pilot and copilot during the flight will help eliminate errors.

Flight planning may determine the difference between a smooth, professional flight and one in which you feel as if the aircraft arrived at the destination 5 minutes before you did!

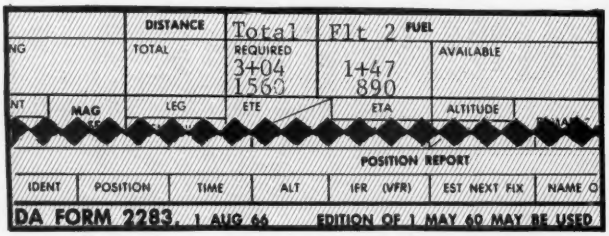
FIGURE 3

IFR FUEL PLANNING

	Flight 1	Flight 2
Total ETE	0+42	0+05
Delays	0+10	
Approach and Landing	0+10	0+12
Total Flight Time	1+02	1+17
IFR Reserve	0+30	0+30
Total Flight + Reserve	1+32	1+47
Total Fuel Required:		
1+32 at 500 pph =	768 lbs	
1+47 at 500 pph =		890 lbs

Total Fuel Required for Stopover Flight

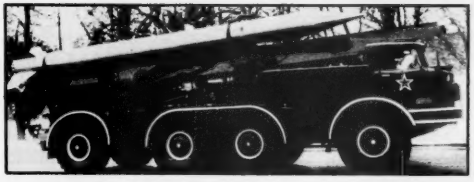
Total Flight Time Flight 1	1+02
Total Flight Time Flight 2	1+17
Run up at Intermediate Stop	0+15
IFR Reserve	0+30
Total Flight Time and Reserve	3+04
Total Fuel Requirement:	
3+04 at 500 pph =	1,560 lbs

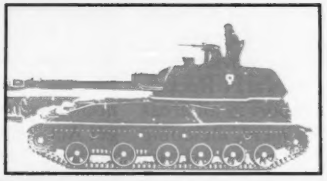


Note: DD Form 175 Void Time may be computed by subtracting fuel reserve from total fuel requirement [3+04 - 30 = 2+34, rounded to the next whole hour = 3+00 void time]. Any ground time with the aircraft not running must be added to the total.

Major Forrest D. Williams
Threat Manager
Directorate of Combat Developments
U.S. Army Aviation Center
Fort Rucker, AL

THREAT BRANCH





IF YOU'VE SEEN the recent threat articles, then Threat Branch, U.S. Army Aviation Center (USAAVNC), Ft. Rucker is doing its job; that is, providing you, the Army aviator, with threat information that could possibly save your life. Such is our charter and we not only gladly accept this responsibility, but hope we can do it better through feedback from all aviators who read these articles. It is our goal to provide you with articles that are both interesting and stimulating, and not merely a rehash of what you've heard several times before. To this end we are providing a questionnaire along with this article. We would especially like to know what type of articles you would like to see. So please take a moment to fill out the questionnaire and send it to us.

There are several other ways in

Electronics (Radar/ Communications)

Radioelectronic Combat

Electrochemical Warfare

Advanced Electronic Systems

MAJ Forrest D. Williams

Data Base

Nuclear-Chemical-Biological

CPT Frank E. Babiasz

Field Artillery

ATGM

Laser/Electro-optics

Obscurants

Surface-Surface Missiles

CPT E. Gary Campbell

Combat Vehicles (Tank/APC)

SAM/AA

Tactical Aviation

Air-Air Missiles

Air-Surface Missiles

CPT Carl E. Daschke

which we can provide assistance, but to better understand how we can do this, let me briefly describe how we are organized. The branch is under the Concepts and Studies Division, Directorate of Combat Developments (DCD). Our mission is basically threefold: provide overall threat management at Ft. Rucker; provide threat support in all areas of combat development, including all phases of aviation systems acquisition; and provide threat support to local training and training development actions.

As threat managers, we ensure the receipt of appropriate classified documents, including all-source, which form our data base for post and DCD use. The data base also holds numerous briefings, including slides, concerning all facets of the threat. Obviously, we are also the central coordinating USAAVNC element for threat matters with outside agencies such as TRADOC, DARCOM, and national-level intelligence agencies. Because we have data from these many sources we are able to perform analyses to provide you threat information.

In combat developments we provide and coordinate threat inputs to all phases of aviation systems acquisition, including the advanced scout helicopter, advanced attack helicopter, Helicopter Launched Fire and Forget missile, CH-47 Chinook Mod program, Stand-Off Target Acquisition System, and Multipurpose Lightweight Missile System, as well as other minor systems. Emphasis on these threat inputs centers on forward edge of the battle area operations, although where necessary, we provide threat data related to rear area operations.

In training and training development, we review instruction and lesson plans, and provide input to Army aviation publications containing threat. We recently provided input to the forthcoming aviator's recognition manual (FM 1-88) which should greatly aid all aviators.

All in all, we have a broad and interesting mission. But, *how can we help you?* Internally, each of our people are responsible for certain functional threat areas, and these are shown above. If you have questions concerning any of these areas, you can write to the following address for information: Directorate of Combat Developments, ATTN: ATZQ-D-CT (MAJ Williams), Ft. Rucker, AL 36362. Our AUTOVON is 558-5671/4709 if you would like to request information that way. When requesting information, please bear in mind that many of our answers will be classified. Therefore, written requests should contain a certification for receipt of classified documents with associated address. Besides answering specific questions, we can provide you with information for the preparation of briefings, lesson plans and any other matters pertaining to threat.

As stated, we are here to provide you with the best threat assistance possible. We have a very capable group, and if you need this assistance, please do not hesitate to contact us. We'll be looking forward to hearing from you.

USAAVNC THREAT BRANCH QUESTIONNAIRE

1. Do you find recent threat articles to be interesting and informative?

Above Average
Average
Below Average

2. Do you feel that recent threat articles have increased your understanding of the Soviet threat?

Yes
Somewhat
No

3. What kind(s) of article subjects would you like to see in future *Aviation Digest* issues? (Please number more than one, i.e. 1 (Most), 2, 3, etc.)

__Armor
__Artillery
__Air Defense
__Aviation
__Advance Systems
__ATGMs
__Other_____

__Tactics
__Soviet Soldier
__Electronic Warfare
__CBR
__Support Assets
__System Vulnerabilities

4. Do you feel that the Soldiers in your unit are knowledgeable concerning threat matters?

Yes
No

5. The greatest threat to Army tactical aviation (in my opinion) is (1, 2, 3, etc.):

__Armor
__Artillery
__Air Defense
__Aviation
__IFV/APC/ATGMs
__Radioelectronic Combat
__CBR
__Other_____

6. Optional: Remarks_____

Optional: **Duty Position_____**
Rank/Name_____
Unit_____
Station_____

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MISSES AND COLLISIONS

ON THE SUBJECT of major midair collisions, the Soviet Union truly can claim a first. Almost 45 years ago a Soviet airliner and a small single engine aircraft collided over Moscow resulting in 49 fatalities. Twenty-one years later the United States experienced its first major midair collision over the Grand Canyon when a Super Constellation collided with a DC-7 killing 128 people. About 4 years later the same two airlines got together again over New York City. This time there were 134 fatalities.

The problem of midairs has been around for a long time; however, it has become increasingly controversial with a lot of finger pointing and emotional outbursts. The reaction of the Federal Aviation Administration (FAA) has been the establishment of many additional safety programs and procedures such as:

- areas of positive control at higher altitudes;
- terminal control areas;
- terminal radar service areas;
- military operating areas; and
- military training routes.

Despite the reduction of the midair collision potential due to these safety enhancements, a survey of the flying public made by Aviation Consumer Action Project a little more than a year ago indicated that 90 percent of the respondents thought that safety procedures permitting both commercial airlines and private aircraft to use the same airspace are inadequate.

Why is the flying public so skeptical? Apparently, it is not because of the safety record of the airlines. During the past 12 years the airlines have transported the equivalent of 10 times the total U.S. population. During the same 12-year period, they were involved in only six midairs which resulted in fatalities in U.S. airspace, with only one such incident in the past 6 years.

In an FAA study of validated near midair collisions covering a period of 29 months (1 July 1976 to 1 December 1978), nearly two-thirds involved terminal operations below 10,000 feet. Seventy-four percent of these involved at least one aircraft not known or not in contact with the air traffic control system. Further analysis of the FAA data reveals that 47 percent of the validated near midairs below 10,000 feet occurred *below* 3,000 feet while 33 percent were between 3,000 and 6,000 feet. *These are the areas where the Army conducts its VFR operations!* What do all these statistics mean? Just this! In order to make sure that the Army does not become a major contributor to the midair collision hazard at these lower altitudes, *command and personal* emphasis must be placed on cockpit professionalism. In other words, we all must combat complacency and keep our heads on a swivel to assure compliance with the "see and avoid" concept.

Readers are encouraged to address matters concerning air traffic control to:

Director
USAATCA Aeronautical Services Office
Cameron Station
Alexandria, VA 22314

Status Report

THE ADVANCED SCOUT Helicopter (ASH) Special Study Group (SSG) was established by the Department of Army (DA) and was implemented by United States Army Training and Doctrine Command with United States Army Materiel Development and Readiness Command participation in August 1978. Its purpose was to perform a comprehensive study in order to make recommendations in regard to an ASH program for consideration by a Special Army Systems Acquisition Review Council (ASARC) and Office of the Secretary of Defense (OSD) Program Review in early fiscal year 1980. Emphasis was placed on validating the need for scout helicopter assignment to attack helicopter, air cavalry and field artillery units, defining required mission equipment, and assessing the suitability of several existing or modified military, commercial and North Atlantic Treaty Organization (NATO) helicopters for the mission.

The OH-58 Kiowa currently is employed in the scout helicopter role. It is a militarized version of a commercial design, with limited growth potential, procured against a light observation helicopter specification. In its current configuration, it has insufficient ability to accomplish scout helicopter functions as it lacks communications, required navigation capability, survivability and target acquisition equipment for sustained operations under battlefield conditions projected for the mid 1980s (night combat operations; visibility obscuration by smoke, aerosols, dust and adverse weather; employment of electronic warfare, and highly sophisticated air defense weapons).

The need to replace the current OH-58 with a capable scout helicopter is driven by the substantial growth in threat offensive capabilities which include improved armor and air defense weapons and a capability to fight day, night and through the various battlefield obscurants. The scout helicopter serves as the integrator of aviation antiarmor firepower into the combined arms team. When committed to battle, the scout helicopter significantly improves attack helicopter survivability; improves the total force loss exchange ratio to levels required for successful defense; performs reconnaissance, surveillance, target acquisition, and command and control functions for aviation and maneuver units; and provides target acquisition and precision designation for artillery and other service antiarmor systems.

The SSG completed its study last October and found that the aerial scout helicopter requirement was real and immediate and that alternatives should include: modular design mast mounted target acquisition sensors for day, night and obscured visibility conditions; tactical navigation and communications equipment for day and night terrain flight operations; and the ability to carry armament and aircraft survivability equipment which may be installed on modified existing U.S. or NATO military or commercial or new development helicopters in the 5,000 to 8,000 pound mission gross weight range.

The Special ASARC held at HQDA on 30 November 1979 resulted in the following specific recommendations:

- That the need for the ASH be approved.
- That the development of ASH to support AAH units (attack and air cavalry) be approved.
- That the need to expedite fielding of mast mounted sight and laser designator technology be approved to satisfy immediate scout helicopter requirements for AH-1S Cobra and field artillery units.

The Special ASARC decisions in regard to the above recommendations are summarized as follows:

- The requirement for an aerial scout helicopter was reaffirmed.
- The best long-term, technological solution to this need is a new development helicopter and although this solution is not now affordable, work would continue on a program to support future development.
- A near-term program will be developed to field an aerial scout having mast mounted sight and laser designation technology to work with AH-1S and field artillery units.

The OSD Review on 18 December 1979 supported the near-term program but deferred discussion of the long-term program.

The ASH Project Manager and the TRADOC System Manager – Scout Helicopters are working to implement the ASARC decisions and will make recommendations in regard to a program to satisfy the near-term requirement to HQDA this June. With these very positive recent actions the Army has moved significantly nearer to the day when a much needed aerial scout helicopter is fielded.

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